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ABSTRACT

The oral reading miscues of 18 proficient readers, six each from grades 2, 4, and 6, were divided into those which did not change syntactic structure (nontransformation miscues) and those which did (retransformation miscues) and were analyzed through the use of the Goodman Taxonomy of Reading Miscues. The two groups of miscues were compared with the following categories: (1) correction attempts, (2) cueing from the peripheral visual field, (3) dialect, (4) graphic and phonemic relationships, (5) grammatical function, (6) level of syntactic involvement, (7) syntactic and semantic proximity, and (8) syntactic and semantic acceptability. Retransformation miscues were further categorized according to changes effected on the deep and surface-level structures. A total of 1,742 miscues were analyzed, of which 1,061 were retransformation miscues. Qualitative differences between retransformation and nontransformation miscues and qualitative differences within retransformation miscues were considered. Tables, appendixes, and a bibliography are included. (WB)

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SUMMARY

This study is the second in a series of related studies concerned with a description of the reading process and the development of a reading theory.

The oral reading miscues of eighteen proficient readers - six each from grades two, four and six - were divided into those which did not change syntactic structure (non-transformation miscues) and those which did (re-transformation miscues) and analyzed through use of The Goodman Taxonomy of Reading Miscues. Significant categories of the taxonomy against which these two miscue groups were examined include correction attempts, cueing from the peripheral visual field, dialect, graphic and phonemic relationships, grammatical function, level of syntactic involvement, syntactic and semantic proximity and syntactic and semantic acceptability.

The re-transformation miscues were then further categorized according to changes effected on the deep and surface level structure of the material. The three categories involved:

1. The reader's inference of a deep structure different from the author's.
2. The reader's inference of the same deep structure as the author but use of a different set of transformations to attain surface structure.
3. The reader's inference of the same deep structure as the author but use of alternate available transformations to attain surface structure.

This set of categories represents a first attempt in the application of transformational grammar to the analysis of reading miscues, and has become the broad base upon which more refined analyses will be built. In general, an analysis utilizing these categories has already enabled us to begin to identify and predict points at which miscues are likely to occur.

A total of 1,742 miscues were analyzed, 1,061 of which were categorized as involving re-transformations. One group of data coming from research concerned qualitative differences between non-transformation and re-transformation miscues. For example:

1. The number of miscues made per hundred words by the older readers moves toward moderate ranges. The number of re-transformation miscues drops.

2. While the graphic and phonemic proximity of miscues increases through the grades, they are lower for re-transformation miscues than for non-transformation miscues at each level - graphic proximity being always higher than phonemic proximity.

3. There is an increasing tendency to retain the grammatical function of the miscue, even within re-transformation miscues, with changes tending to concern compounding of inflectional and derivational endings, tense and number changes, and shifts in function words.

4. By the second grade, these readers demonstrate a strong control of both syntactic and semantic acceptability and proximity. This control increases for each of the succeeding age groups. For re-transformation miscues, semantic proximity at each of the levels is higher than syntactic proximity.

A second group of data involved qualitative differences within re-transformation miscues and the predictive power which use of such categories promises. For example:

1. Re-transformation miscues tend to occur at pivotal points in language structure. Points at which alternate possible structures are possible.

2. While no one grammatical function proved difficult, particular form classes functioning within a grammatical function tended to be involved in miscueing.

3. The compounding of inflectional and derivational endings on a root word increased the possibility of miscueing.

The research has demonstrated the utility of the reading theory which we have developed as well as the usefulness of concepts from transformational grammar for categorizing reading phenomena.

I

INTRODUCTION

The study reported here is part of an ongoing program (since 1963) of psycholinguistically based research designed to facilitate development of a theory of the reading process. It has become apparent that analysis of the reading development, skills, and techniques of children must be based upon an adequate model of the reading process. This research is meant to contribute basic data concerning that process, and to provide a foundation for further theory related studies.

In earlier studies (Goodman, 1965; Goodman and Burke, 1968), a procedure was developed for the analysis of unexpected oral reading responses of children reading unfamiliar material. Any observed response which departed from the expected response was termed a miscue. The choice of this term was based upon the assumption that every response made by the reader is cued by some aspect of the reading situation.

Data collected from these prior and continuing studies of children's behavior while reading orally, indicate that some oral reading represents grammatical re-transformations of the expected responses to the graphic stimuli. The current phase of this research, reported here, examines this re-transformation phenomenon in depth.

Essentially, the major purposes of this study are:

1. A detailed description of the range of grammatical re-transformations that occur in the oral reading of a group of second, fourth and sixth grade children considered to be relatively proficient readers.

2. A general linguistic analysis of the total reading miscues produced by these readers.

3. Formulation of a series of testable hypotheses concerning the reading process as it relates to instruction, materials, and testing.

4. Addition to the basic fund of knowledge concerning the reading process as a contribution toward the establishment of a functional reading model.

Rationale

An analysis of the miscues was made through the use of both structural and transformational linguistic categories, and was handled in two parts. All of the miscues were examined against already existent general linguistic criteria, The Goodman Taxonomy of Reading Miscues. (See Appendix A.)

Those miscues which involved grammatical re-transformations were singled out, and descriptive categories were formed in terms of the number and kinds of re-transformations which occurred.

The term re-transformation is used within this research to designate any change in grammatical structure which occurs to a textual sequence during oral reading. Re-transformations have a relationship to the concept of transformations.

The term transformation has been used to designate "...processes which move constituents around in sentences or remove constituents altogether." (Jacobs and Rosenbaum, 1967). Transformations are the devices through which a deep structure can be hypothecated for all surface level sentences.

A reader is dealing with a set of generated and transformed sentences which he encounters in graphic surface structures. The miscues that a reader makes may reflect his inference of the deep structures with which he momentarily thinks he is dealing. He can effect changes which are alternate transformations of the same basic deep structure which is represented in the printed text (whether they are acceptable or unacceptable forms at the surface level), or he can initiate changes that reflect a change in the deep structure of the material.

The changes which the reader institutes are a form of transformation in that they affect the relationship of grammatical constituents. They have been termed re-transformations within this research because they are not restricted to manipulation of already present constituents within one sentence, but may also involve introduction of new constituents and change across sentence structure.

The reading process can be viewed as a complex psycholinguistic phenomena in which the cognitive processes of the reader, the structure of the language, and the physical format of the material interact.

A tentative model originating from this view of the reading process has been developed by K. Goodman (See Appendix B.) He suggests that "Reading is a complex process by which a reader reconstructs, to some degree, a message encoded by a writer in graphic language."

Since oral reading involves not only decoding, but at least some encoding, K. Goodman (1967) has suggested that the model of information processing in proficient readers is this:

/Graphic/ /input/ decoded → /meaning/ encoded → /oral/ /output/

If this model is a fair representation, then transformations of both syntax and meaning are not only possible, but predictable. There is no direct relationship between the graphic input and the oral output. Rather, the reader decodes directly from print. He then encodes what he has comprehended as oral output. This is, of course, a rapid process, and the reader is influenced by his recall of what he actually saw (or thought he saw). But, he is influenced also by his own grammatical rules, his experiences, his concepts. Thus, a comparison between actual and expected responses can indicate a great deal about transformational processes and the generation of English speech.

Starting from this basic model, which represents an oral reading situation for a competent reader, we are able to begin to depict the changes which occur in the reading process across developmental stages, in differing reading tasks, and in materials of differing difficulty.

The silent reading model for the same reader would then be:

/graphic/
/input / decoded → /meaning/

The basic model is able to stand intact across this and other variations because it has incorporated within it an expectation for the existence of complex relationships between a multitude of variables. At the same time, the transfer of meaning always remains at the core of the process.

Complementing a theory of reading must be a theory of language production. The work of the school of generative transformational grammarians led by Noam Chomsky has attempted to develop a theory of language competence through a study of language performance. Such a theory must indicate how the basic structures of a language are formed (generated), and how they can be changed to produce alternate (transformed) structures. This concept allows a finite set of structures or rules to produce infinite variations.

Basic to a generative transformational grammar is a concept of deep and surface structures. The deep structures are the finite ones which form the language, and within them rests meaning. Transformations upon these deep structures generate surface structures, which are the actual utterances, in any or all of their acceptable variations (both written and oral).

A set of generative transformational rules can be devised to represent the grammar of any particular person or group of persons. The differences existing between the grammars of separate dialects may be categorized and studied as complete and self-sustaining entities because there are internal rules for functioning within a dialect. And the developmental language stages of a child's speech can be handled in the same manner as dialects. A set of transformational rules can be devised to represent the structure of his language at any particular developmental stage. The child's language can be viewed as a complex, rule governed whole, and its rules can be contrasted to those operating within the structure of the printed text.

The third major component of a psycholinguistic view of reading must be a theory of language development. Jean Piaget and Lev Vygotsky have offered theories which accommodate much of the recent study of linguists concerning the structure of language and its development.

The intellect of children is seen as developing through a series of stages. All normal children pass through these stages, but the speed of their progression is individually determined by such peripheral factors as intelligence, social background, and education. Each developmental stage has a specific list of identifiable features, and is looked upon as a complete, rule governed, complex whole.

A significant aspect of a child's developing intellectual capacity involves the handling of an ever increasing number of variables in the analysis of any situation. A child's developing language may be similarly viewed. The progressively inclusive use of speech phonemes, intonation patterns, telescoped one-word-sentences, and bi-structural patterns, through multi-functional structures, can be viewed as an ever increasing ability to handle multiple language variables within a developing rule governed grammatical structure.

Related Research

Although very little research has been directly related to transformations in oral reading, some studies, primarily concerned with an oral reading phenomenon, have provided information relative to basic psycholinguistic processes.

A study by K. Goodman (1965) resulted in some new insights into reading cues. The basic assumptions underlying the research were that all reading behavior is cued and that reading errors are not haphazard. Goodman categorized three kinds of reading cues: those within words, those external to language, and those within the reader. His research gives evidence that certain kinds of reading miscues are indicative of particular developmental reading phases, and suggests that the structure of the written material influences the kind and percentage of reading miscues that occur.

Another contribution of this research is the development of a Taxonomy of Cues and Miscues in Reading, which provides a linguistically based depth analysis for the study of reading miscues.

A few other studies have utilized the Goodman Taxonomy of Reading Miscues. The two most closely related to this research are those reported by Y. Goodman (1967) and Goodman and Burke (1968).

Y. Goodman analyzed the oral reading of a group of beginning readers over a period of one year. The results of her research demonstrated that a depth study of the oral reading behavior of a group of children using a miscue analysis is highly productive of knowledge about the total language process. As in K. Goodman's study, substitution and omission miscues reflected differing developmental reading levels. There was a tendency for the grammatical function to be unchanged by a substitution miscue, and evidence that the grammatical function which a word was fulfilling affected the percentage of successful corrections. In general, miscues affected meaning change more than syntactic change; and they resulted in increased semantic and syntactic acceptability with time.

The study by Goodman and Burke confirmed the interplay of semantic, syntactic, and graphophonic information in the reading process of proficient fourth and fifth graders. All of the children seemed to have a solid control of the grammatical structures of the language and tended to correct or not correct, depending on whether or not the miscue resulted in a syntactically and/or semantically acceptable statement. Very small percentages of their miscues resulted in grammatical patterns which were totally unacceptable, and a very high percentage of their miscues produced fully acceptable grammatical patterns. When making word or phrase substitutions, the children had a strong tendency to do so within grammatical categories.

These studies identified a type of miscue in oral reading in which the reader's response is a grammatical retransformation of the expected response. The studies showed that such miscues appear in very young readers, and appear frequently in the reading of relatively proficient readers as well.

Within the last few years, psychologists have been active in studying the transformational processes. The bulk of the studies, since Chomsky's 1957 formulation of transformational grammar, have been directed toward demonstrating the psychological reality (or unreality) of transformational rules. The principle method has been two-fold (Ervin-Tripp and Slobin, 1966): (1) to seek measures of behavioral complexity for sentences, hopefully reflecting the number of rules (transformational or otherwise) required in the generation of a sentence string from its underlying kernel; (2) to demonstrate the psychological centrality of active, declarative sentences, since these are, according to Chomsky, the transformationally least complex sentences. Both of these approaches produced equivocal results, reflecting an oversimplified conception of Chomsky's grammar, a failure to appreciate the inter-relatedness of the processes involved in sentence generation, and, in part, inadequacies of the grammar itself, corrected since 1965.

Some of the studies have been directed toward showing the psychological importance of grammar in general. They have attempted to show the importance of syntax using natural language materials. And have occasionally been interpreted as disconfirming the transformational approach; it will be helpful to dispel this illusion.

Miller and Isard (1963) demonstrated that syntactically correct nonsense sentences (in English) were easier to understand under noise conditions than were random sequences of words. Similarily, sentences that are both syntactically and semantically meaningful were easier than merely syntactical strings of words. Levin and Mearini (1964) showed that syntax influenced attention. They reasoned that Italian children should classify nonsense syllables having distinguishing end features more easily than English children, since Italian is a more complexly suffixed language than English. Their expectations were confirmed. It is interesting to note that they used a reading task in this study; thus, it may have something to say about the effect of syntax on the perception of graphic forms.

Fodor and Bever (1965) presented subjects with tape recorded sentences, into which "clicks" had been inserted at random positions. They found that there was a strong tendency to perceive clicks as being heard closer to the nearest major syntactic boundary (based on immediate-constituent analysis) than they actually were. Furthermore, the distribution of acoustic pauses did not account for the positional drift. They interpreted their results as indicating that the segments marked by the formal analysis are in fact functional units in perception, clicks being displaced to preserve the unity of the segments. Johnson, (1965, 1966a, 1966b) in a series of progressively more differentiating studies, has demonstrated that the conditional error probabilities of sentence words upon repetition are lower within syntactic units than between units. He interprets his results as indicating consistency with the models of sentence generation proposed by Miller and Chomsky (1963) and Yngve (1960). His results were also similar to the model of Osgood (1963).

Other studies have attempted to elucidate the processes involved in the child's acquisition of syntax. (Summarized in Ervin and W. Miller, 1963 and in Smith and G. Miller, 1966.) They have shown that the notion of "linguistic rule", central to Chomsky's theory, is an efficient (perhaps necessary) method of representing children's syntax. In particular, there is evidence that a child is able to understand syntactic features before he is able to produce them (Fraser, Bellugi and Brown, 1963), and that, in learning to produce syntactically "correct" sentences, the child first learns to apply a rule to familiar material, then he over-generalizes the rule (e.g., "doed" for "did do"), and finally he learns the exceptions to the rule (Ervin and W. Miller, 1963). Brown and Bellugi (1964) contend that the acquisition of syntax proceeds in this way, and not via simple conditioning. Children imitate adult speech to a great extent, but the constraints on length, word order and types of words omitted in the child's imitation argue against simple repetition and in favor of rule-governed behavior.

Those psychologists who studied transformational grammar found this field to be almost as controversial in their area as it has been in linguistics.

The seminal work is that of George Miller, who attempted to verify the psychological reality of transformational rules. Miller used a variety of techniques, based on the reasoning that,if transformations are psychologically real, then subjects must remember sentences by decoding them into a kernel representation (i.e., a representation of the semantic properties of the sentence--cf. Mehler, 1963) and a representation of the transformations that must be applied to generate the sentence (Miller and Chomsky, 1963). Thus, perceptual confusions, errors of recall, and time required to verify grammatically different sentences ought to be a two-stage process.

Mehler (1963) showed that errors of recall of sentences occurred in a pattern consistent with this model - syntactic features, particularly transformations, were more easily confused and could be lost entirely without the meaning of the sentence being distorted. Miller (1962) showed that it took more time to verify (that is, compare with the kernel form) transformed sentences, and most interestingly, that the extra time to verify a passive-negative sentence, for instance, was equal to the sum of the times required to verify passives or negatives alone. This would seem to be striking confirmation of the "separate encoding" hypothesis. Savin and Perchenok (1965) studied how much additional material (in the form of nonsense syllables) could be held in immediate memory along with test sentences of varying transformational complexity. They found that the space in memory taken up by the transformation codings was strictly additive.

This series of experiments would seem to argue in favor of Chomsky's 1957 model of grammar, involving strict separation of the levels of grammatical processing. Other studies, however, have provided a wealth of evidence to show that this conception is incorrect.

Martin and Roberts (1966), using a measure of sentence complexity based on Yngve's model of grammar (essentially, a phrase-structure grammar), showed that when sentence complexity and mean length are controlled, sentence kind does not predict retention in the way proposed by a transformational analysis. They further claim that indexing previous studies (Mehler's, in particular) with "Yngve numbers" of sentence complexity, accounts for all the variance attributed to transformational differences. Clark (1965) used sentence frames of various types and had subjects fill in the missing words. In computing the informational uncertainty of the response (a logarithmic function of the number of response alternatives used), he found that uncertainty varied from a sentence to its passive transform. He claims that a transformational analysis would predict no difference in uncertainty, since a passive is just a transformed active.

The validity of both of these attacks upon transformational grammar is suspect, however, unless we accept the original notion of a strict separation of syntactic and semantic processing. And there are a number of studies showing that syntactic processing is dependent upon semantic features of the sentence, and further, that such a result does not invalidate a transformational analysis.

F. Smith (1965) required subjects to alter the meanings and the syntax of test sentences. He found that the ease with which a syntactic change could be made depended upon whether or not a meaning change was involved. Further, the prediction that change of meaning would be reflected in longer performance times held for passive transformations, but not for negatives. The most general conclusion that can be drawn here is that the extent and nature of semantic processing will determine the ease and nature of syntactic processing. This has great significance when we consider it in relation to Goodman's view of reading as involving simultaneous syntactic and semantic processing.

These studies, therefore, lead us to conclude that if the transformational model of grammar is at all psychologically real, its operation must be seen as inter-related with the operation of the semantic process. This, however, would still leave us with little to choose from between such a grammar (if the specification can go no further) and alternate phrase-structure grammars, such as Yngve's, were it not for two things: (1) a revision, by Chomsky, (1966) of transformational grammar to accommodate this "semantic parallelism" and (2) a striking confirmation of the validity of this new approach by Clifton and his co-workers.

Basically, the revision involves a shifting upward of the determination of sentence kind. The choice as to whether a sentence will be a passive, negative or what-have-you is no longer left entirely to the transformational level. Instead, appropriate "morphemic" elements are introduced on the phrase-structure level of the grammar, and these elements then determine the application of the transformational rules.

We are now able to accommodate the data indicating that transformational processing is semantically sensitive. It appears then, that the weight of the evidence is in favor of the transformational hypothesis. The strict separation of semantic from syntactic process originally proposed does not hold up. Revisions in the grammar can deal with this problem. There have been exceptions to this rule, but the exceptions deal mostly with the acquisition of syntax in children.

Because traditional principles of learning theory do not seem adequate to account for transformations, some psychologists and linguists have been led to postulate innate predispositions for the learning of transformations (Ervin-Tripp and Slobin, 1966; Weisstein, 1965). No empirical studies have as yet dealt with this problem in a direct fashion.

A final group of studies has used structural and transformational linguistic theories to investigate the language of children and/or the miscue phenomenon.

Menyuk (1963a, 1963b, 1964) was one of the first to make use of a transformational grammar in the study of children's language. And she has made the most detailed study of transformations in children's speech. In an immediate memory free-recall task, she showed that ability to repeat back a sentence was, for nursery school and kindergarten children, dependent upon sentence kind (i.e., the particular rule in question) and not upon length or complexity. Although the younger children altered more rules, repeating back distorted forms, it was still true that three year olds appear to have the basic rules of grammar at all major levels (phrase-structure, transformations, morphology). In a more detailed study (1963b), Menyuk showed that nursery school and first grade children showed practically no difference in their handling of rules on the phrase-structure level, but did show difference at the transformational level. Further, certain transformations were used more frequently by the older children, but the reverse was never true. Based on the assumption that deviations from adult speech were generated by rules in the children's grammar, Menyuk wrote a grammar which specified the rules that had been used by the children. In a later study (1964) Menyuk found that complexity was not related in any simple way to the acquisition of more complex sentence types. Rather, there appears to be differences in the way children use grammatical rules at various ages, as opposed to differences in the rules they possess. Also, the recorded rate of deviant structures increased periodically as new patterns were added to a child's repertoire.

An attempt was made by Slobin (1963) to test the psychological reliability of transformations. His research seemed to indicate that there is a psychological relationship for transformation, but that this relationship to thought is not directly related to logically categorized levels of transformation difficulties.

In a research study concerned with significant variables in the development of mature writing, Hunt (1965) started out by replicating the LaBrant study and obtained similar results. He then moved to the development of a more definitive system for the analysis of written grammatical structures. As a result of his study, Hunt devised the T-unit as a means of structural analysis. This unit is composed of a main clause and its accompanying subordinate clauses. It proved to be the most accurate measure of maturity, the length increasing both with age and reading proficiency. In a further refinement of the components of the T-unit, the nominal structures were seen to account for the major portion of the growth pattern.

A study by O'Donnell, Griffin, and Norris (1964) made use of Hunt's T-unit and analyzed the grammatical structures used by children at different ages in writing and speaking. Their findings substantiated the use of the T-unit as the single most valid measure of syntactic control.

Clay (1967), using linguistic criteria, studied the behavior of a group of beginning readers for a period of one year. She found that reading failure appeared to be connected with a child getting bogged down too long in any one phase of the process. This research, like Goodman's, gives evidence that certain kinds of reading miscues are indicative of particular developmental reading phases.

An analyzation of errors made by adult readers was done by Kolers (1967). Results indicated that reader errors depended upon a sense of orientation, and are patterned or predictable. When the grammatical function was altered, it was not haphazard, but showed established patterns of preferred choice. Results also indicated that no part of speech was unduly difficult for the readers and that errors tended to be corrected or not corrected depending on whether they resulted in unacceptable or acceptable syntax and/or meaning. Kolers established a strong argument for the perception of words as meaning holders.

Weber (1967) conducted research into the reading errors of first grade children. She was interested in describing the nature of the errors as they might reveal reading levels and strategies. Although there are some limitations to this study due to the fact that several common kinds of reading errors were omitted from consideration, the important factor to be considered is the similarity between these results and those of the other related studies.

Procedures

Subjects. In this study, eighteen children from Elementary and Middle schools in Highland Park, Michigan were selected by their teachers and test data as highly proficient readers. For the purposes of this study, "highly proficient" was defined as reading one year or more above grade level. The subjects were all considered to be normally intelligent, and successful readers. Six of the children were in the sixth grade; six were in the fourth grade; six were second graders.

Materials. The sixth grade children read the story "Sheep Dog" from the eighth grade book of the Allyn and Bacon, Sheldon Basic Reading Series. (See Appendix C.) Subjects in the fourth grade read "My Brother is a Genius" from the sixth grade book of the American Book Company, Betts Basic Readers. (See Appendix D.) The second graders read "Freddie Miller, Scientist" from the fifth grade book of the American Book Company, Betts Basic Readers. (See Appendix E.)

Basal series' materials were used because the material has been graded for difficulty by at least one commonly accepted method. Specific series were chosen because they provided materials which were unfamiliar to the children.

Emphasis was placed upon having the material at a level which would initiate some reading difficulty without causing the subjects to give up on the task. For this reason, the selected books were one grade level above the subject's classroom reading. (As indicated by the publishers.)

Recording Process. Each subject was required to read orally the selected story in its entirety. The reading miscues were noted by an investigator on a duplicate manuscript during the oral reading. The subject was then asked to retell the story in his own words. Both the oral reading and the retelling of the story were recorded on audio tape.

Prior to the taping, each subject was told that he would be reading a story which he had never seen before, and which would be somewhat difficult. He was also told that the researcher would offer no help, that he could use any reading techniques, and that he would be asked to retell the story. It was emphasized that his oral reading would help teachers to understand how children read, and that no grades or marks would be given.

Data Analysis. The audio tape recordings were replayed until all miscues were identified precisely and added to each subject's story sheet. Each miscue was then analyzed for its relation to the text and the reading process. For this purpose, The Goodman Taxonomy of Reading Miscues was used. The twenty-eight questions of the taxonomy were answered in relation to each miscue.

Those reading miscues judged to involve grammatical re-transformations were then separated from the total miscues and examined to determine the kinds and levels of re-transformations involved. Included within this analysis was a count of the re-transformations occurring on each text sentence, and evaluation of the deep structure changes that were made.

A total of 1,742 complex miscues, incorporating 2,093 sub-miscues, was recorded and analyzed. Of the total complex miscues, 1,061 involved grammatical re-transformations. Because of the large number of complex miscues to be analyzed, basic statistical procedures were handled through a computer program.

A typescript of the oral retelling was made, and a comprehension rating was used to score each subject's retelling of the story. (See Appendix F.) The possible scores involved a range from zero through forty.

A personal data sheet was compiled for each subject. (See Appendix G.) School records and teacher informants provided the source of information.

Depth Analysis. Most research studies in reading have chosen to study a few variables over relatively large groups. This study, which attempts to describe all the possible variables involved in reading miscues, is a depth study. As such, it must be limited to a small number of subjects. One variable for eighteen subjects generates the same volume of data as eighteen variables for one subject.

II

MISCUE PHENOMENA

This chapter will present data on miscues made by children in the three grades and compare those that did and did not involve re-transformations.

Table 1 shows the total number of miscues made by the 18 readers. The complex miscues for the three grades total 1,742. When the complex miscues are broken down into sub-miscues, the number becomes 2,093.

Sub-miscues are a result of complicated miscues in which portions of the taxonomy may be applied concurrently to separate portions of the miscue. A portion of the text was, Under rocks and ledges.... A child read, Under rocky ledges.... It is possible, by using two sub-miscues, to consider the changes in grammatical function for the substitution of rocky for rocks and for the omission of and.

The increase in actual number of miscues made from grades two through six is related to the fact that story length increases for the older children, since rate (miscues per hundred words) does not increase.

Miscue Occurrence

The actual number of miscues made by individual readers ranges from 34 to 102 for the second graders, from 30 to 160 for the fourth graders and from 89 to 194 for the sixth graders (see Table 2). The percentages of these miscues which involve grammatical re-transformations run from 63% to 84% for the second grade, from 45% to 75% for the fourth grade and from 39% to 64% for the sixth grade.

In Table 3, these figures are reported as miscues per hundred words of text (M.P.H.W.) and re-transformation miscues per hundred words of text (R.M.P.H.W.). For grade two, M.P.H.W. run from 2.5 to 7.4, R.M.P.H.W. run from 1.6 to 5.8. For grade four, M.P.H.W. run from 1.5 to 7.8, R.M.P.H.W. run from 0.9 to 5.9. For grade six, M.P.H.W. run from 2.4 to 5.2, R.M.P.H.W. run from 1.4 to 3.3.

The widest extremes of miscue behavior are shown by the fourth graders. Some explanation for this can be found in the fact that these children are nearing the end of a four year period in which there has been intensive use of oral reading. Some of the children are at peak performance in oral reading. Others are in the process of transferring to intensive use of silent reading. An earlier study (Goodman and Burke, 1967) indicated "clumsy" oral reading characterizes such transitions.

The narrowest range of miscue behavior is shown for the sixth graders. They no longer tend to be "specialists" in the oral reading mode - thus eliminating the lowest ranges of miscue occurrence. They have developed greater facility with a wider range of sentence structures than have the younger readers - eliminating the upper range of miscue occurrence.

As proficient readers get older, their oral reading miscue occurrence appears to become more moderate. At the same time, the percentage of these miscues involving retransformations seems to drop.

Table 1.--Total Sub-miscues, Complex Miscues and Re-transformation Miscues for Individuals and Grades

Subject	Sub-miscues	Complex Miscues	Re-transformation Miscues
Grade 2			
253	109	73	61
254	49	34	22
255	127	102	79
256	66	58	37
257	91	74	51
258	77	56	39
Group	519	397	289
Grade 4			
432	220	160	121
434	42	40	18
435	60	51	38
439	32	30	18
441	119	106	63
442	133	104	69
Group	606	491	327
Grade 6			
607	194	175	75
630	96	89	50
631	229	194	124
634	124	101	58
635	150	141	53
636	175	154	85
Group	968	854	445

Table 2.--Total and Re-transformation Miscues for Individuals and Grades

Subject	Miscues	
	Total	Re-transformation
Grade 2		
253	73	61 84%
254	34	22 65%
255	102	79 77%
256	58	37 63%
257	74	51 69%
258	56	39 70%
Group	397	289 73%
Grade 4		
432	160	121 75%
434	40	18 45%
435	51	38 75%
439	30	18 60%
441	106	63 60%
442	104	69 66%
Group	491	327 67%

Table 2.--Continued

Subject	Miscues	
	Total	Re-transformation
Grade 6		
607	89	50 56%
630	101	58 57%
631	141	55 39%
634	154	85 55%
635	175	75 43%
636	194	124 64%
Group	854	445 52%

Table 3.--Miscues per Hundred Words (M.P.H.W.) and Retransformation Miscues per Hundred Words (R.M.P.H.W.) for Individuals and Grades

Subject	M.P.H.W.	R.M.P.H.W.
Grade 2		
254	2.5	1.6
258	4.1	2.8
256	4.2	2.7
253	5.3	4.4
257	5.4	3.7
255	7.4	5.8
Average	4.8	3.5
Grade 4		
439	1.5	0.9
434	1.9	0.9
435	2.5	1.9
442	5.1	3.4
441	5.2	3.1
432	7.8	5.9
Average	4.0	2.7
Grade 6		
630	2.4	1.4
634	2.7	1.6
635	3.8	1.5
636	4.1	2.3
607	4.7	2.0
631	5.2	3.3
Average	3.8	2.0

Comprehension

Each subject retold the story immediately after the oral reading. A comprehension score of forty was possible, with a maximum of five points each being given for recall, depth, theme, sub-plot, subtleties, sequence and completeness.

Comprehension scores ranged from 21 to 29 for the second grade, 15 to 34 for the fourth grade and 13 to 29 for the sixth grade (see Table 4). There is a fairly wide range of comprehension scores for individual readers at all three grade levels.

The average score was 25 for the second grade, 26 for the fourth grade, 22 for the sixth grade. There is no increase in comprehension due simply to increased age. These results apparently demonstrate that the stories were of comparable difficulty.

When comprehension scores are compared to number of miscues, no direct relationship can be found.

Within the second grade group, subjects 258, 253 and 255 had the highest comprehension ratings at the same time that they had low, moderate and high numbers of miscues.

In the fourth grade group, subjects 439 and 432 had moderate comprehension along with the lowest and highest number of miscues.

Subjects 30 and 7 in the sixth grade had the lowest comprehension scores accompanying low and high numbers of miscues.

At all three grade levels, these relatively proficient readers exhibit a wide range of comprehension which is in no way connected to the actual number of miscues made.

Table 4.--Comprehension Rating and Total Miscues for Individuals

Subject	Comprehension	Total Miscues
Grade 2		
256	21	58
254	21	34
257	22	74
258	28	56
253	28	73
255	29	102
Grade 4		
441	15	106
442	25	104
439	26	30
432	27	160
434	30	40
435	34	51
Grade 6		
30	13	89
7	14	175
36	22	154
34	27	101
35	27	141
31	29	194

Peripheral Visual Field

When a miscue is a substitution or an insertion, it is possible that it was cued by a morpheme, word or phrase in the reader's visual periphery.

For non-transformation miscues the percentages, through the grades, for which this is an inappropriate category, run 24%, 45% and 36% (see Table 5). For non-transformation miscues where there is no peripheral cueing, the figures are 61%, 49% and 51%. Peripheral visual cueing is involved in 15%, 6% and 13% of the miscues in the second, fourth and sixth grades.

For re-transformation miscues, the percentages, through the grades, for which this is an inappropriate category, run 37%, 29% and 31%. For re-transformation miscues where there is no peripheral cueing, the figures are 36%, 43% and 41%. Peripheral visual cueing is involved in 27%, 28% and 29% of the re-transformation miscues in the second, fourth and sixth grades.

At all three grade levels there is a slight tendency for miscues not to involve cueing from the visual peripheral field. That this trend is strongest for the second and fourth grade readers is probably an indication that they have a tendency to focus in upon and be conscious of individual words in the text.

The percentage of re-transformation miscues involving visual cueing is greater, at each grade level, than the like percentage of non-transformation miscues. There is a tendency for miscues involving visual cueing to involve grammatical changes. This might indicate that these readers process peripheral cues out of sequence and are led to predict structure which is at variance with the writer's. It could also be, however, that having predicted a variant grammatical structure, the reader seizes on partially seen visual cues in the periphery to support the prediction. Probably a combination of both phenomena is operating.

Table 5.--Miscues Involving the Peripheral Visual Field for Grades Two, Four and Six

Miscue	Field				
	Inappropriate	Not in periphery	Close periphery	Extended periphery	Doubtful
Grade 2					
Non-transformation	25	65	11	4	1
	.236	.613	.104	.038	.009
Re-transformation	101	98	47	25	2
	.370	.359	.172	.092	.007
Grade 4					
Non-transformation	74	81	5	3	1
	.451	.494	.031	.018	.006
Re-transformation	90	133	70	14	0
	.293	.433	.228	.046	.000
Grade 6					
Non-transformation	145	204	30	14	8
	.362	.509	.075	.035	.020
Re-transformation	135	179	97	27	4
	.305	.405	.220	.061	.009

Dialect

The children used in this study all lived in an inner city suburb of Detroit. Their families would be classified as falling within the lower and lower-middle class, socially and economically. There were nine Negroes, eight Caucasians and one Oriental in the study. Four had foreign language backgrounds in the home (Japanese, Greek, French Canadian and Swedish) and another ten had southern backgrounds. The possible occurrence of social and regional dialect variation within their reading should be greater than usual.

Ninety-two percent, 92% and 82% of the non-transformation miscues at the three grade levels do not involve dialect. For the re-transformation miscues, the figures are 95%, 92% and 95%. There is a very strong tendency for dialect not to be involved in their miscues (see Table 6).

The sixth grade offers an interesting contrast to the second and fourth grades. At the same time that non-transformation miscues involving dialect increase, re-transformation miscues involving dialect decrease. As these readers develop proficiency and scan larger language segments, there is an increased use of their dialect at the phonemic and word levels. At the same time, they have developed a wider use and recognition of English structure patterns and are proficient at anticipating and reading structures which are not common to their own dialects.

These proficient sixth grade readers make greater use of the phonemes and words of their dialect at the same time that they limit the effects of its structural differences on their reading.

Table 6.--Non-transformation and Re-transformation Miscues Involving Dialect for Grades Two, Four and Six

Miscue	Dialect			
	Not involved	Dialect	Idiolect	Doubtful
Grade 2				
Non-transformation	97 .915	2 .019	1 .009	6 .057
Re-transformation	276 .952	0 .000	0 .000	14 .048
Grade 4				
Non-transformation	150 .915	4 .024	4 .024	6 .037
Re-transformation	300 .923	16 .049	1 .003	8 .025
Grade 6				
Non-transformation	329 .820	10 .025	19 .047	43 .107
Re-transformation	424 .949	0 .000	2 .005	21 .047

Graphic and Phonemic Proximity

For substitution miscues, the graphic relationship between the text and the miscue is scored on a ten point scale (see Table 7).

At each of the three grade levels, the percentage of non-transformation miscues increases moving from low to high graphic proximity. Proficient readers at each of the three grade levels tend to make miscues which have high graphic proximity to the text.

At the same time, the percentages for high proximity - 40% second grade, 41% fourth grade, 60% sixth grade - increase with age. As proficient readers grow older, they strengthen the tendency for their miscues to have high graphic proximity to the text.

For the second grade, the graphic proximity for re-transformation miscues runs 28% low, 22% moderate, 19% high - actually reversing the trend set for non-transformation miscues. These figures suggest that when young readers become concerned with structure that concern is overriding.

For the fourth and sixth grade readers, the percentage of re-transformation miscues increases as graphic proximity moves from low to high - in a weaker, but similar trend to the non-transformation miscues. Concern with structural changes is combined with a moderate concern for graphic proximity in these older proficient readers. They are apparently better able to integrate graphic and syntactic cues.

The phonemic relationship between the E. R. and the O. R. is also scored on a ten point scale in Table 8.

The percentage of non-transformation miscues having no phonemic similarity to the E. R. is low - 7% to 15%. This is not as low as the figures for the same category in graphic proximity - 5% to 8%. Some level of graphic proximity is involved in a greater percentage of miscue than is phonemic proximity.

For both the second and fourth grades, the larger percentages of miscues have low or moderate phonemic relationship. This is probably directly connected to the fact that at these levels, the reader is making grosser use of phonic cues, often using initial or final consonant sequences.

At the sixth grade level, there are constantly increasing percentages from low to high proximity, an indication that finer phonemic connections are being made.

The percentage of miscues having no phonemic similarity to the E. R. increases when re-transformations are examined - 30% to 40%. Again, this figure is higher than the one for the same category in graphic proximity.

At the second grade level, the trend is toward low phonemic proximity in re-transformation miscues. This would seem to reflect the reader's just developing skills. For the fourth grade there is a continued increase in percentage from low to high proximity. There is a peak use of phonemic skills at this level.

By the sixth grade, the trend has reversed again and points toward low phonemic proximity for re-transformation miscues. The readers are proficient users of phonemic skills, but tend to moderate the use of this skill at points where grammatical structure becomes highly significant to them.

Similar trends exist between graphic and phonemic proximity. However, at each grade level and for both non-transformation and re-transformation miscues, graphic proximity is higher than phonemic proximity. These figures reflect the relationship between the phonemes of the language and the written symbols used to represent them as well as the reader's slight preference for graphic cueing: he uses graphic cues more consistently than associated phonemic ones.

Table 7.--Graphic Proximity of Non-transformation and Retransformation Miscues for Grades Two, Four and Six

Miscue	Graphic Proximity									
	No similarity	Key elements	Final	Beginning	Beginning middle	Beginning final	Beginning middle, final	Similar spelling	One grapheme difference	Homographs
					Grade 2					
Non-transformation	5 .049	10 .098	4 .039	12 .118	7 .069	16 .157	7 .069	5 .049	36 .353	0 .000
	5%	26%			29%			40%		
Re-transformation	46 .303	16 .105	9 .059	18 .118	23 .151	7 .046	4 .026	3 .020	26 .171	0 .000
	30%	28%			22%			19%		
					Grade 4					
Non-transformation	8 .049	10 .062	3 .019	11 .068	18 .111	29 .179	17 .105	2 .012	64 .395	0 .000
	5%	15%			40%			41%		
Re-transformation	65 .355	6 .033	4 .022	18 .098	19 .104	13 .071	3 .016	1 .006	52 .284	2 .011
	36%	15%			19%			30%		
					Grade 6					
Non-transformation	32 .080	27 .068	9 .023	16 .040	21 .053	31 .078	24 .060	54 .135	182 .455	4 .010
	8%	13%			19%			60%		
Re-transformation	48 .191	31 .123	11 .044	18 .071	37 .147	21 .083	8 .032	26 .103	52 .206	0 .000
	19%	24%			26%			31%		

Table 8.--Phonemic Proximity of Non-transformation and Retransformation Miscues for Grades Two, Four and Six

Miscue	Phonemic Proximity									
	No similarity	Common sounds	Key element	Key sounds	Similar sounding	Two non-consecutive differences	Two phoneme difference	One phoneme difference	Morpho-phonemic shift	Homophones
					Grade 2					
Non-transformation	11	4	18	9	6	4	22	28	0	0
	.108	.039	.177	.088	.059	.039	.216	.275	.000	.000
	11%	30%			31%			28%		
Re-transformation	61	5	22	12	7	1	19	24	0	0
	.404	.033	.146	.080	.046	.007	.126	.159	.000	.000
	40%	26%			18%			16%		
					Grade 4					
Non-transformation	11	9	13	47	9	7	19	46	1	0
	.068	.056	.080	.290	.056	.043	.117	.284	.006	.000
	7%	43%			22%			29%		
Re-transformation	72	5	17	11	3	2	25	48	0	0
	.393	.027	.093	.060	.016	.011	.137	.262	.000	.000
	39%	8%			16%			26%		
					Grade 6					
Non-transformation	58	21	25	22	19	16	47	186	6	0
	.145	.053	.063	.055	.048	.040	.118	.465	.015	.000
	15%	17%			21%			48%		
Re-transformation	77	22	30	19	15	8	36	44	2	0
	.304	.087	.119	.075	.059	.032	.142	.174	.008	.000
	30%	28%			23%			18%		

Grammatical Function

Table 9 indicates the percentage of occurrence for each grammatical function found in the stories read. Table 10 indicates the grammatical function of the text words which were involved in miscues.

In the non-transformation miscues of the second, fourth and sixth grade readers, adjectives were involved in about twice as many miscues as the percentage of their occurrence in the text. This included such miscues as the non-word substitutions of /frenquent/ for *frequent* and /favable/ for *favorable*, word substitutions such as *Eddie's mother* for *Freddie's mother*, and the omission of *chemistry* from the noun phrase *a chemistry set* when the reader failed to recognize or attack the word.

Adjectives are giving the readers difficulty, but not simply because of grammatical function which they perform.

Function words accounted for between 48% and 61% of the re-transformation miscues for the three grades. Substitution miscues include *the worst that...* for *the worst smell.*, *... and started to work the...* for *... and started toward the....* Omission miscues include *Run up from the...* for *Run up the...*, *... so they touched.* for *... so that they touched.*

Function words appear at points in language structure where either optional or alternate structures are possible. This decreases the assurance with which a reader can handle them and increases the possibility of structural miscues involving them. Thus, these miscues are very directly related to their grammatical structure.

Table 9.--Percentage of Occurrence for Each Grammatical Function Within the Texts for Grades Two, Four and Six

Grade 2	
Noun	32%
Verb	19%
Adjective	7%
Adverb	7%
Function Word	35%
Indeterminate	0
Grade 4	
Noun	30%
Verb	17%
Adjective	8%
Adverb	6%
Function Word	36%
Indeterminate	2%
Grade 6	
Noun	30%
Verb	15%
Adjective	8%
Adverb	5%
Function Word	42%
Indeterminate	0

Table 10.--Expected Grammatical Function of Non-transformation and Re-transformation Miscues for Grades Two, Four and Six

Miscue	Expected Grammatical Function					
	Noun	Verb	Adjective	Adverb	Function word	Indeterminate
			Grade 2			
Non-transformation	32 .305	25 .238	15 .143	10 .095	23 .219	0 .000
Re-transformation	35 .170	27 .131	9 .044	14 .068	120 .583	1 .005
			Grade 4			
Non-transformation	53 .327	30 .185	24 .148	10 .062	23 .142	22 .136
Re-transformation	61 .253	38 .158	14 .058	12 .050	116 .481	0 .000
			Grade 6			
Non-transformation	140 .355	67 .170	58 .147	33 .084	96 .244	0 .000
Re-transformation	45 .143	39 .124	18 .057	18 .057	194 .618	0 .000

Levels of Syntactic Involvement

Table 11 indicates the number of miscues involved at each grammatical level. A miscue can involve one, several or all of seven levels: sub-morphemic, bound morpheme, free morpheme, word, phrase, clause, sentence. The omission of the word the from the sentence It was well after dark when they were quiet and she could return to the camp. involves an omission at the free morpheme level and word level and a substitution at the phrase level (to camp for to the camp).

For both total and re-transformation miscues, the word level is the most frequently involved. Words function as the pivotal grammatical structure in written communication. They are the smallest, free-standing, meaningful, written unit. It is virtually impossible, with the exception of some tense and mode changes, to affect a grammatical change at the clause, phrase or sentence level without also involving the word level.

One important shift is noticeable between the figures for total miscues and re-transformation miscues. Within re-transformation miscues at the three grade levels, the phrase level moves from third to second place. At the sixth grade, clause moves from sixth to fifth place. As reader's interest shifts from smaller to larger units of structure, more complex grammatical changes occur.

Proficient readers are operating on multiple grammatical levels as they read. The structure of the English language is complex and a change at one level will tend to precipitate change at other levels.

Tables 12a, 12b and 12c indicate the involvement of the different miscue types at each of the structural levels. For both non-transformation and re-transformation miscues in the three grades, substitution is the most frequent miscue type. In part, this is due to the fact that substitution miscues act as pivotal elements in reading miscues, much as words function as pivotal units in reading communication. An omission or insertion miscue at one grammatical level will have a tendency to function as a substitution at another grammatical level. The omission of small from the phrase the small stream produces a substitution at the phrase level. The phoneme substitution of /u/ for /a/ in farther results in a substitution at the free morpheme and word levels.

Omissions outnumber substitutions at the clause level for re-transformation miscues in grades two and four. By the sixth grade, substitutions are again the most frequent type. The omission miscues at this level tend to signal some difficulty with structure.

While Freddie cleaned out the refrigerator, his mother kept saying, "Just like your Uncle Maximilian!" was started by one reader *Well, ...* and then corrected. A similar miscue and correction occurred with the sentence *As he was eating, Freddie decided to fix the clock.* when the reader first omitted *as*. Apparently these readers were having difficulty with a left branching sentence structure (one in which a dependent clause precedes the main clause).

Our treatment of one aspect of language structure insures a moderate amount of clause level omissions and insertions. An omission or insertion of an *adjective* within a noun phrase is classified as an omission or insertion at the clause level because the adjective is considered a transformed clause within the deep structure of the sentence. The omission of *small* from *his small sister* causes the omission of the deep structure clause *the sister was small*.

For proficient readers, who seldom omit words because they can't identify them, substitutions are the most frequent miscue types at all levels.

Table 11.--Total and Re-transformation Miscues at Each Level of Grammatical Involvement for Grades Two, Four and Six

Level of Involvement	Miscues	
	Total	Re-transformation
Grade 2		
Sub-morphemic	136	62
Bound morpheme	69	41
Free morpheme	414	209
Word	461	237
Phrase	236	223
Clause	40	37
Sentence	6	6
Grade 4		
Sub-morphemic	111	55
Bound morpheme	111	72
Free morpheme	486	229
Word	553	275
Phrase	242	234
Clause	63	63
Sentence	4	4
Grade 6		
Sub-morphemic	341	77
Bound morpheme	141	65
Free morpheme	774	340
Word	890	395
Phrase	397	376
Clause	69	67
Sentence	13	13

Table 12a.--Level of Involvement of Non-transformation and Re-transformation Miscues for Grade Two

Level of Involvement	Miscue Type					
	Not involved	Substitution	Insertion	Omission	Reversal	Non word
Non-transformation Miscues						
Sub-morpheme	58 .547	26 .245	7 .066	14 .132	1 .009	
Bound morpheme	97 .915	4 .038	2 .019	3 .028	0 .000	
Free morpheme	6 .057	94 .887	1 .009	4 .038	1 .009	
Word	0 .000	84 .793	0 .000	3 .028	1 .009	18 .170
Phrase	98 .925	6 .057	0 .000	1 .009	1 .009	
Clause	103 .972	3 .028	0 .000	0 .000	0 .000	
Sentence	105 1.00	0 .000	0 .000	0 .000	0 .000	
Re-transformation Miscues						
Sub-morpheme	207 .770	23 .086	12 .045	27 .100	0 .000	
Bound morpheme	230 .849	14 .052	9 .033	17 .063	1 .004	
Free morpheme	31 .129	105 .438	21 .088	78 .325	5 .021	
Word	2 .008	133 .557	21 .088	77 .322	6 .025	0 .000
Phrase	65 .226	181 .629	21 .073	15 .052	6 .021	
Clause	253 .872	16 .055	2 .007	18 .062	1 .003	
Sentence	284 .979	2 .007	3 .010	1 .003	0 .000	

Table 12b.--Level of Involvement of Non-transformation and Re-transformation Miscues for Grade Four

Level of Involvement	Miscue Type Not involved	 Substitution	 Insertion	 Omission	 Reversal	 Non word
	Non-transformation Miscues					
Sub-morpheme	124 .756	29 .177	6 .037	4 .024	1 .006	
Bound morpheme	148 .902	5 .031	2 .012	9 .055	0 .000	
Free morpheme	9 .055	151 .926	0 .000	3 .018	0 .000	
Word	0 .000	100 .614	0 .000	1 .006	0 .000	62 .380
Phrase	160 .976	3 .018	0 .000	0 .000	1 .006	
Clause	164 1.00	0 .000	0 .000	0 .000	0 .000	
Sentence	164 1.00	0 .000	0 .000	0 .000	0 .000	
	Re-transformation Miscues					
Sub-morpheme	239 .813	13 .044	6 .020	35 .119	1 .003	
Bound morpheme	209 .744	39 .139	5 .018	27 .096	1 .004	
Free morpheme	46 .167	113 .411	40 .146	76 .276	0 .000	
Word	0 .000	163 .593	34 .124	77 .280	0 .000	1 .004
Phrase	90 .278	205 .633	14 .043	10 .031	5 .015	
Clause	263 .807	24 .074	10 .031	28 .086	1 .003	
Sentence	322 .988	2 .006	1 .003	1 .003	0 .000	

Table 12c.--Level of Involvement of Non-transformation and Re-transformation Miscues for Grade Six

Level of Involvement	Miscue Type					
	Not involved	Substitution	Insertion	Omission	Reversal	Non-word
Non-transformation Miscues						
Sub-morpheme	163 .410	147 .369	37 .093	47 .118	4 .010	
Bound morpheme	351 .882	17 .043	9 .023	21 .053	0 .000	
Free morpheme	37 .093	349 .879	0 .000	10 .025	1 .003	
Word	3 .008	285 .718	0 .000	1 .003	1 .003	107 .270
Phrase	394 .983	6 .015	0 .000	0 .000	1 .003	
Clause	399 .995	2 .005	0 .000	0 .000	0 .000	
Sentence	401 1.00	0 .000	0 .000	0 .000	0 .000	
Re-transformation Miscues						
Sub-morpheme	344 .817	31 .074	13 .031	33 .078	0 .000	
Bound morpheme	359 .847	44 .104	10 .024	11 .026	0 .000	
Free morpheme	65 .161	163 .403	82 .203	94 .232	1 .003	
Word	10 .025	213 .526	83 .205	94 .232	1 .003	4 .010
Phrase	66 .149	326 .738	26 .059	20 .045	4 .009	
Clause	379 .850	34 .076	15 .034	11 .025	7 .016	
Sentence	433 .971	10 .022	1 .002	1 .002	1 .002	

Syntactic and Semantic Proximity

Both the syntax and meaning of a miscue are compared to the expected structure of the text along a ten point scale of proximity in Tables 13 and 14.

As might be expected, at all three grade levels virtually all of the non-transformations have high syntactic proximity to the text - 95% to 99%.

For re-transformation miscues, a small percentage have low proximity - 13% to 5%. The greater percentage of re-transformation miscues have high to moderate structural proximity to the text. High proximity increases from 45% to 57% as the grade level increases.

This seems to indicate that older readers are more able to achieve closer agreement with the author's deep structure and produce more minor changes, which are more likely to involve use of optional or alternate rules. There is a strong tendency for the miscues of these proficient readers to have high structural proximity to the text.

There is a much wider spread when the semantic proximity of the miscues is examined. A substantial number of miscues fall within the unrelated category - from 48% to 14% for non-transformation categories and from 3% to 1% for re-transformation categories.

High semantic proximity for non-transformation miscues ranges from 39% to 59% and for re-transformation miscues from 51% to 60%. Two relationships are important here.

At the second grade level, where the readers tend to be word conscious and where there are fewer structural cues offered by the text, the non-transformation miscues have a greater tendency toward high proximity than the re-transformation miscues. By the fourth grade structural involvement in the miscue is related to closer semantic proximity to the text.

Within non-transformation miscues, syntactic proximity is always higher than semantic proximity. This is to be expected since almost any shift in syntax will be classified as a re-transformation.

Within re-transformation miscues, semantic proximity is always higher than syntactic proximity. As a reader gains in proficiency, he processes larger language sequences. He apparently moves close to meaning through deriving a deep structure close to the author's, but then uses alternate ways to encode this meaning and generate a surface structure which is near but not the same as the original.

Table 13.--Syntactic Proximity of Non-transformation and Re-transformation Miscues for Grades Two, Four and Six

Miscue	Syntactic Proximity									
	Unrelated	Little in common	Key element	Major change	Minor change	Phrase structure & intonation	Within phrase structure	Person tense number	Function word, etc.	No change
	Grade 2									
Non-trans-formation	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	5 .047	19 .179	28 .264	54 .509
	0%	0%			5%			95%		
Re-trans-formation	1 .004	1 .004	0 .000	36 .125	34 .118	15 .052	73 .253	38 .132	89 .308	2 .007
	.4%	13%			42%			45%		
	Grade 4									
Non-trans-formation	0 .000	0 .000	0 .000	0 .000	1 .006	0 .000	1 .006	10 .061	18 .110	134 .817
	0%	0%			1%			99%		
Re-trans-formation	0 .000	0 .000	0 .000	34 .104	44 .135	8 .025	69 .212	60 .184	98 .301	13 .040
	0%	10%			37%			53%		
	Grade 6									
Non-trans-formation	1 .003	0 .000	0 .000	0 .000	2 .005	0 .000	8 .020	17 .042	84 .210	289 .721
	.3%	0%			3%			97%		
Re-trans-formation	3 .007	2 .005	1 .002	17 .038	100 .224	9 .020	62 .139	60 .134	190 .425	3 .007
	1%	5%			38%			57%		

Table 14.--Semantic Proximity of Non-transformation and Re-transformation Miscues for Grades Two, Four and Six

Miscue	Semantic Proximity									
	Unrelated	Vaguely related	Appropriate unrelated	Partial association	Some association	Antonym	Associated	Slight change	Synonym	No change
	Grade 2									
Non-transformation	15 .142	2 .019	4 .038	6 .057	1 .009	4 .038	11 .104	46 .434	1 .009	16 .151
	14%	11%			15%			59%		
Re-transformation	8 .028	1 .003	0 .000	109 .376	10 .035	2 .007	12 .041	102 .352	0 .000	46 .159
	3%	38%			8%			51%		
	Grade 4									
Non-transformation	78 .476	1 .006	6 .037	7 .043	1 .006	1 .006	6 .037	36 .220	5 .031	23 .140
	48%	9%			5%			39%		
Re-transformation	3 .009	5 .015	1 .003	83 .255	6 .018	6 .018	11 .034	156 .479	1 .003	54 .166
	1%	27%			7%			65%		
	Grade 6									
Non-transformation	135 .337	6 .015	16 .040	34 .085	2 .005	7 .018	12 .030	58 .145	21 .052	110 .274
	34%	14%			5%			47%		
Re-transformation	9 .020	8 .018	6 .014	140 .314	10 .022	3 .007	3 .007	144 .323	0 .000	123 .276
	2%	35%			4%			60%		

Syntactic and Semantic Acceptability

At all three grade levels, virtually all of the miscues result in sequences which are fully or partially syntactically acceptable. From 95% to 98% of the non-transformation miscues are totally syntactically acceptable and from 62% to 78% of the re-transformation miscues are totally acceptable.

Proficient readers, by the second grade, have very strong control of the structures of their language. Even at points where the reader is having some difficulty with structure, he tends to come up with alternatives which are structurally acceptable with some portion of the surrounding text.

There is a wider range for semantic acceptability. From 42% to 13% of the non-transformation miscues are semantically unacceptable. At the same time, from 54% to 59% of the non-transformation miscues are totally acceptable. There is a tendency for the non-transformation miscues of these proficient readers to be totally semantically acceptable.

For re-transformation miscues, semantic unacceptability drops way down to 2% to 4%. Total acceptability ranges from 54% to 70%. As with semantic proximity, semantic acceptability for re-transformation miscues is below that for non-transformation miscues at the second grade. The relationship is reversed by the fourth grade and miscues involving grammatical shifts have a greater tendency to be semantically acceptable than do non-transformation miscues.

Our second graders, when the going gets rough, apparently have difficulty arriving at a deep structure from which to derive meaning. The more advanced readers can achieve some kind of deep structure and thus come up with an acceptable (though perhaps changed) meaning.

Table 15.--Syntactic Acceptability of Non-transformation and Re-transformation for Grades Two, Four and Six

Miscue	Unacceptable	Acceptable prior	Acceptable after	Acceptable in sentence	Totally acceptable
	Grade 2				
Non-transformation	0	5	0	0	101
	.000	.047	.000	.000	.953
	0	5%			95%
Re-transformation	9	86	13	2	180
	.031	.297	.045	.007	.621
	3%	35%			62%
	Grade 4				
Non-transformation	0	3	0	0	161
	.000	.018	.000	.000	.982
	0	18%			98%
Re-transformation	2	70	4	0	250
	.006	.215	.012	.000	.767
	1%	23%			78%
	Grade 6				
Non-transformation	0	10	0	0	391
	.000	.025	.000	.000	.975
	0	3%			97%
Re-transformation	8	130	14	3	292
	.018	.291	.031	.007	.653
	2%	33%			65%

Table 16.--Semantic Acceptability of Non-transformation and Re-transformation Miscues for Grades Two, Four and Six

Miscue	Semantic Acceptability				
	Unacceptable	Acceptable prior	Acceptable after	Acceptable in sentence	Totally acceptable
			Grade 2		
Non-transformation	14 .132	8 .076	0 .000	10 .094	74 .698
	13%	17%			70%
Re-transformation	10 .035	93 .321	13 .045	8 .028	166 .572
	4%	39%			57%
			Group 4		
Non-transformation	69 .421	5 .031	0 .000	2 .012	88 .537
	42%	4%			54%
Re-transformation	5 .015	80 .245	4 .012	5 .015	232 .712
	2%	27%			71%
			Group 6		
Non-transformation	129 .322	21 .052	1 .003	15 .037	235 .586
	32%	9%			59%
Re-transformation	8 .018	137 .307	13 .029	6 .013	283 .633
	2%	65%			63%

Conclusions

Analysis of the reading miscues of these relatively proficient second, fourth and sixth graders leads to the following conclusions.

1. Among fourth graders, the range of miscues is more moderate than it is among second graders.
2. The percentage of miscues involving re-transformations is successively lower from second to fourth to sixth grade.
3. There is a wide range of comprehension for these readers. Increase in comprehension is not tied to increase in age (hence the reading tasks were apparently comparable in difficulty).
4. There is no notable relationship between comprehension and number of miscues for these proficient readers.
5. Peripheral visual cues tend not to be important, particularly among the second graders.
6. There is a slight tendency for miscues involving peripheral visual cueing to involve grammatical re-transformations.
7. A very small percentage of the reading miscues involve dialect.* At the sixth grade, there is an increase in non-transformation dialect involved miscues (phonemic and word level) and a decrease in re-transformation dialect involved miscues over the previous two grades.
8. There is a strong tendency toward high graphic proximity in non-transformation miscues which increases through the grades.
9. There is a tendency toward low graphic proximity for re-transformation miscues at the second grade. At the fourth and sixth grades, there is a trend toward high graphic proximity which is similar to but weaker than the one for non-transformation miscues. It appears that concern for graphic proximity is moderated as concern for structure increases.
10. There is a tendency toward moderate phonemic proximity for non-transformation miscues at the second and fourth grade levels and high proximity at the sixth grade.

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*In this study, minor phonemic variations were not considered.

11. There is a movement from low to moderate phonemic proximity for re-transformation miscues at the second and fourth grade levels. At the sixth grade, the trend again toward low proximity use of phonics, apparently hits a peak among our fourth graders and then becomes less important.

12. At each of the three grade levels, graphic proximity is greater than phonemic proximity. This means that visual cues are more used than phonological associations by these readers.

13. At each of the three grade levels, there is a strong tendency for the grammatical function of the text to be retained in the miscue.

14. Adjectives were involved in twice as many non-transformation miscues as their occurrence in the text warranted.

15. Function words are involved in about half of the re-transformation miscues made. This is an expected finding, since such words frequently introduce new elements in the surface structure.

16. The word is the most frequently involved grammatical level at each of the three grades.

17. Within re-transformation miscues, the phrase level shifts from third to second place in involvement at all grades and the clause level shifts from sixth to fifth at the sixth grade.

18. Substitution is the most frequent miscue type.

19. Omissions at the clause level for re-transformation miscues outnumber substitutions in the second and fourth grades.

20. Of the non-transformation miscues 95% to 99% have high syntactic proximity to the text.

21. Thirty-nine percent to 59% of re-transformation miscues show high syntactic proximity.

22. Fewer non-transformation miscues show high semantic proximity than show high syntactic proximity - 39% to 59%.

23. The re-transformation miscues are more likely to have high semantic proximity than high syntactic proximity - 51% to 60%.

24. From 95% to 98% of the non-transformation miscues are fully syntactically acceptable and from 62% to 78% of the re-transformation miscues are fully syntactically acceptable.

25. From 54% to 59% of the non-transformation miscues and from 54% to 70% of the re-transformation miscues are fully semantically acceptable.

III

CORRECTION STRATEGY AND ACCEPTABILITY

When a reader corrects, he is giving a direct indication of his own awareness that a miscue has occurred. He is, at the same time, demonstrating his ability to handle the material.

Correction strategies are a natural part of a process that involves selective scanning and anticipation. The need for correction arises when the reader's guess proves to produce meaning and/or structure which is inconsistent with the surrounding material.

Miscues Per Hundred Words, Correction, and Comprehension

In Table 17, the percentage of miscue correction made by individual readers is compared to their M.P.H.W. and their comprehension scores.

The range of correction is 24% to 52% for the second grade, 11% to 57% for the fourth grade and 13% to 32% for the sixth grade. The most extreme correction behaviors are shown at the fourth grade level, just as it also had the widest range of miscue occurrence.

The fourth grade seems to be a significant turning point for these proficient readers. They have more skillful control of a wider variety of reading attack skills than do the second graders. They are applying these skills and techniques at a much more conscious (and sometimes self-conscious) level than are the sixth graders.

By the sixth grade, the range of corrections has both narrowed and lowered. There is a much more moderate use of miscue correction.

Much of the formal reading program has been dropped by the sixth grade, and with it the focus upon oral reading. With the move to silent reading and an ever increasing ability to handle deep structure, the need for overt corrections should tend to drop.

Within the reading done by the sixth graders, frequent pauses were counted in close conjunction with a reading miscue. These pauses have been interpreted as silent corrections on the part of the reader.

The percentage of correction for these proficient readers is not related to either their number of miscues per hundred words or to their comprehension scores, except among fourth graders. Among fourth graders, there is an inverse relationship between miscues per hundred words and percent of correction.

A high percentage of correction was combined with both high (subjects 256, 636) and low (subjects 254, 434) number of M.P.H.W., and a low percentage of corrections was combined with both high (subjects 257, 255) and low (subjects 635,630) number of M.P.H.W.

High percentage of correction combined with high comprehension for subjects 434,439 and low comprehension for subjects 256, 636. Low percentage of correction combined with high comprehension for subjects 255, 432 and low comprehension for subjects 630, 441.

These readers are able to gain enough comprehension from a wide range of narrative and descriptive material to successfully read it. This need not mean that they have the background knowledge or conceptual development to comprehend story subtleties or overriding morals.

At each of the three grade levels, the subjects were able to gain the basic story line of the material. They were not as successful at interpreting the general theme or moral of what they read. This can, perhaps, be traced to the emphasis which is placed upon direct recall of events in most basal reading series.

All aspects of comprehension need not depend totally upon the reader's background knowledge. None of the sixth grade subjects knew the word ewe prior to the reading. Though most of them were never able to determine the correct pronunciation, they were all able to gain from the text the definition of a ewe as a mother sheep. In a similar manner, the fourth grade readers were able to gain, from story context, the definition of a baby genius as an unusual or smart baby.

Other aspects of the stories for which the readers had no direct background experience remained confused. The reference to land formations such as desert, rimrock, meadow, wash and knolls, within the sixth grade text, had no immediate referents for the subjects, and they failed to grasp the significance of the terrain in relation to the story plot. Within the second grade story, the central character made a flashlight by placing batteries "end-to-end along a ruler" and taping them. The readers never were able to grasp the scientific concepts involved in making the flashlight or in any of the other experiments which were discussed in the text.

To a limited extent, these proficient readers may be expected to develop new concepts from their reading. Beyond that, they may be expected to retain relatively proficient reading strategies even on material from which they gain only moderate or superficial comprehension.

Table 17.--Miscues per Hundred Words, Percent of Correction and Comprehension for Individuals

Subject	M.P.H.W.	Percent of correction	Comprehension
		Grade 2	
256	4.2	52%	21
254	2.5	47%	21
257	5.4	24%	22
258	4.1	34%	28
253	5.3	37%	28
255	7.4	30%	29
		Grade 4	
441	5.2	11%	15
442	5.1	17%	25
439	1.5	57%	26
432	7.8	23%	27
434	1.9	45%	30
435	2.5	33%	34
		Grade 6	
630	2.4	13%	13
607	4.7	15%	14
636	4.1	32%	22
634	2.7	19%	27
635	3.8	16%	27
631	5.2	16%	29

Correction and Peripheral Visual Field

At all three grade levels, a very small percentage of the non-transformation miscues actually involve peripheral visual cueing from the field. Of those that do, there is a very slight tendency to correct at the second and fourth grade levels and a tendency not to correct at the sixth grade level (see Table 18a).

For the younger readers, cues in the periphery for non-transformation miscues tend to be graphically related. The first sentence of the fourth grade story reads, If it bothers you to think of it.... The title, which is in the visual periphery, is My Brother is a Genius. Several subjects read If it brothers you.... This kind of cueing from the visual periphery is disruptive of meaning and leads to use of correction strategies by the reader.

In the non-transformation miscues at the sixth grade level, possible alternate terms which can successfully fulfill the grammatical function are more frequently involved. At the same time, the graphic proximity of these miscues drops. The segment ...a sharp whistle from the small camp a hundred yards up the wash. was read ...a sharp whistle from the small camp a hundred yards from the wash. and is typical of the miscues involving visual peripheral field at this level.

Older, proficient readers with a stronger sense of English syntax make non-transformation miscues involving peripheral visual cueing which are structurally more successful at the surface level and so tend not to correct them.

The number of re-transformation miscues involving peripheral visual cueing is greater than for non-transformation miscues, but is still small. The chances of altering structure increase as visual cues from the periphery are involved.

With the exception of a slight tendency to correct miscues involving the close periphery in grade four, there is little or no difference between no correction and correction for re-transformation miscues at any of the three grade levels (see Table 18b).

The two following examples come from the second grade readers and are typical of peripheral visual involvement in re-transformation miscues at the three grade levels. One text segment was Sometimes he thought that a..., was read Sometimes he thought that he... and corrected because the miscue was acceptable only with preceding text. Another text segment was "Why, the clock works after all!" And Freddie would say... and was read "Why, the clock works after all! And all Freddie would say.... In this instance, the miscue was not disruptive and was not corrected.

At each of the three grade levels, the significant variable regulating correction for re-transformation miscues involving peripheral visual cueing is the structural acceptability of the change.

Table 18a.--Correction and Visual Peripheral Field of Non-transformation Miscues for Grades Two, Four and Six*

Correction	Field				
	In-appropriate	Not in periphery	Close periphery	Extended periphery	Doubtful
Grade 2					
No attempt	18 .257	45 .643	7 .100	0 .000	0 .000
Correction	6 .177	19 .559	4 .118	4 .118	1 .029
Unsuccessful	0 .000	1 1.00	0 .000	0 .000	0 .000
Grade 4					
No attempt	54 .450	63 .525	2 .017	1 .008	0 .000
Correction	5 .179	17 .607	3 .107	2 .071	1 .036
Unsuccessful	15 .938	1 .063	0 .000	0 .000	0 .000
Grade 6					
No attempt	124 .383	161 .497	25 .077	11 .034	3 .009
Correction	12 .182	41 .621	5 .076	3 .046	5 .076
Unsuccessful	9 .900	1 .100	0 .000	0 .000	0 .000

*The subcategory of correct responses which are abandoned involves such a few actual occurrences as to be insignificant for these readers and is omitted from consideration within this chapter.

Table 18b.--Corrections and Visual Peripheral Field of Re-transformation Miscues for Grades Two, Four and Six

Correction	Field				
	In-appropriate	Not in periphery	Close periphery	Extended periphery	Doubtful
Grade 2					
No attempt	67 .406	53 .321	29 .176	16 .097	0 .000
Correction	31 .307	41 .406	18 .178	9 .089	2 .020
Unsuccessful	2 .400	3 .600	0 .000	0 .000	0 .000
Grade 4					
No attempt	67 .298	100 .444	47 .209	11 .049	0 .000
Correction	23 .288	31 .388	23 .288	3 .038	0 .000
Unsuccessful	0 .000	1 1.00	0 .000	0 .000	0 .000
Grade 6					
No attempt	110 .314	139 .397	77 .220	21 .060	3 .009
Correction	25 .272	40 .435	20 .217	6 .065	1 .011
Unsuccessful	0	0	0	0	0

Correction and Dialect

Correction of dialect related miscues, both non-transformational and re-transformational, is almost non-existent (see Tables 19a and b). These successful readers have a very insignificant number of dialect related miscues and those that they do have are not corrected.

A second grader read I can't not get... for I can't get.... He did not correct because at his stage of language development and within his grammar, the double negative was called for in the contraction situation. Likewise, without correction, a fourth grader read What his Mother called him depended on what he had done last. as What his Mother called him depend on what he had done last. While With its head down toward the day... was read by a sixth grader as ... towards the day....

At the same time, a second grader reading Miss Miller for Mrs. Miller corrected, as did a fourth grader reading He stood with his feets apart. for He stood with his feet apart.

Corrections of dialect related miscues seem to be an adjustment on the reader's part to the dialect of the author. As was mentioned in the previous section of this report, the subjects in the study have much more dialect variation in their oral language than is indicated by the small number of dialect related miscues. They have become proficient at adapting to the dialect of the author when reading. Of the few dialect miscues that remain, those that are corrected might tend to be indicative of dialect changes which the reader is in the process of making and has become more conscious of hearing.

Table 19a.--Corrections and Dialect of Non-transformation Miscues for Grades Two, Four and Six

Correction	Dialect			
	Not involved	Dialect	Idiolect	Doubtful
Grade 2				
No attempt	63 .900	2 .029	0 .000	5 .071
Correction	32 .941	0 .000	1 .029	1 .029
Unsuccessful	1 1.00	0 .000	0 .000	0 .000
Grade 4				
No attempt	106 .883	4 .033	4 .033	6 .050
Correction	28 1.00	0 .000	0 .000	0 .000
Unsuccessful	16 1.00	0 .000	0 .000	0 .000
Grade 6				
No attempt	256 .790	10 .031	17 .053	41 .127
Correction	64 .970	0 .000	1 .015	1 .015
Unsuccessful	8 .800	0 .000	1 .100	1 .100

Table 19b.--Corrections and Dialect of Retransformation Miscues for Grades Two, Four and Six

Correction	Dialect			
	Not involved	Dialect	Idiolect	Doubtful
Grade 2				
No attempt	162 .921	0 .000	0 .000	14 .080
Correction	104 1.00	0 .000	0 .000	0 .000
Unsuccessful	5 1.00	0 .000	0 .000	0 .000
Grade 4				
No attempt	211 .898	16 .068	1 .004	7 .030
Correction	86 .989	0 .000	0 .000	1 .012
Unsuccessful	1 1.00	0 .000	0 .000	0 .000
Grade 6				
No attempt	332 .946	0 .000	2 .006	17 .048
Correction	91 .958	0 .000	0 .000	4 .042
Unsuccessful	0	0	0	0

Corrections, Graphic and Phonemic Proximity

At each of the three grade levels, there is a tendency to correct non-transformation miscues that have low graphic proximity (see Tables 20a and b). For the second grade subjects, there is a slight tendency to correct for miscues with moderate proximity and a tendency not to correct miscues with high graphic proximity. For the fourth and sixth graders, the tendency not to correct exists for miscues with both moderate and high graphic proximity.

For non-transformation miscues, the tendency to correct diminishes as graphic proximity increases.

For re-transformation miscues, there is a tendency, at all three grade levels, to correct when there is low graphic proximity and not to correct when there is moderate graphic proximity. With high graphic proximity, the second graders tend to correct, the fourth graders have a slight tendency not to correct and the sixth graders have an equal distribution between correction and non-correction. The tendency not to correct is strongest for miscues with moderate graphic proximity to the text.

When structure is involved in the miscue, a moderate concern for graphic proximity is most successful for these proficient readers. This is evidence that readers use syntactic and graphic cues simultaneously. Having produced a transformed response, it's low graphic proximity may cue correction.

The phonemic proximity of miscues is examined in Tables 21a and b.

When non-transformation miscues are involved, the second graders tend not to correct either for low or high phonemic proximity and to correct moderate proximity. Low phonemic proximity doesn't offer these readers enough cues. High proximity is a demonstration of their very best attempt; they have come as close as they can without use of other skills.

The fourth graders tend to correct or attempt to correct miscues at all levels of phonemic proximity. They have a large number of unsuccessful corrections and demonstrate an overuse of this reading skill, reflecting the stress placed upon it in most elementary reading programs.

The sixth graders tend to correct non-transformation miscues with low phonemic proximity and not to correct those of moderate or high proximity. By this age, the use of phonics has moderated.

For re-transformation miscues at the second grade level, there is a tendency to correct those that involve either high or low phonemic proximity and not to correct those with moderate proximity. At the fourth and sixth grades, the tendency is to correct miscues with low phonemic proximity and not to correct those with moderate or high proximity.

The second graders, who are still more conscious of the individual words involved in the reading process, are disturbed by low phonemic proximity and correct or attempt to correct (the only unsuccessful corrections occur at this level). At the same time, even when they have high phonemic proximity, their word consciousness leads them to correct and attempt to be exact.

The fourth and sixth graders demonstrate a shift in concern to larger language structural units and a much more moderate use of phonemic proximity.

Graphic proximity is a much more consistently and moderately used skill than phonemic proximity. Readers apparently find it more useful to rely on visual cues than on matching phonological cues to them, which is not surprising in a process that uses visual input.

Table 20a.--Correction and Graphic Proximity of Non-transformation Miscues for Grades Two, Four and Six

Correction	No similarity	Key elements	Final	Beginning	Beginning middle	Beginning final	Beginning middle, final	Similar spelling	One grapheme difference	Homographs
Grade 2										
No attempt	4	4	2	9	4	11	4	2	27	0
	.060	.060	.030	.134	.060	.164	.060	.030	.403	.000
Correction	1	5	2	3	3	5	3	3	8	0
	.030	.152	.061	.091	.091	.152	.091	.091	.242	.000
Unsuccessful	0	1	0	0	0	0	0	0	0	0
	.000	1.00	.000	.000	.000	.000	.000	.000	.000	.000
Grade 4										
No attempt	6	7	2	8	14	21	10	2	49	0
	.050	.059	.017	.067	.118	.177	.084	.017	.412	.000
Correction	2	3	1	3	3	4	1	0	10	0
	.074	.111	.037	.111	.111	.148	.037	.000	.370	.000
Unsuccessful	0	0	0	0	1	4	6	0	5	0
	.000	.000	.000	.000	.063	.250	.375	.000	.313	.000
Grade 6										
No attempt	27	19	7	10	15	26	23	46	146	4
	.084	.059	.022	.031	.046	.081	.071	.142	.452	.012
Correction	5	8	2	6	5	5	1	6	28	0
	.076	.121	.030	.091	.076	.076	.015	.091	.424	.000
Unsuccessful	0	0	0	0	1	0	0	2	7	0
	.000	.000	.000	.000	.100	.000	.000	.200	.700	.000

Table 20b.--Corrections and Graphic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Correction	No similarity	Key elements	Final	Beginning	Beginning middle	Beginning final	Beginning middle, final	Similar spelling	One grapheme difference	Homographs
				Grade 2						
No attempt	28 .337	7 .084	2 .024	8 .096	20 .241	3 .036	3 .036	2 .024	10 .121	0 .000
Correction	16 .246	9 .139	6 .092	10 .154	3 .046	4 .062	1 .015	1 .015	15 .231	0 .000
Unsuccessful	1 .500	0 .000	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
				Grade 4						
No attempt	44 .336	5 .038	2 .015	10 .076	14 .107	12 .092	3 .023	1 .008	38 .290	2 .015
Correction	21 .404	1 .019	2 .039	8 .154	5 .096	1 .019	0 .000	0 .000	14 .269	0 .000
Unsuccessful	0	0	0	0	0	0	0	0	0	0
				Grade 6						
No attempt	36 .198	22 .121	5 .028	14 .077	27 .148	17 .093	5 .028	18 .099	38 .209	0 .000
Correction	12 .171	9 .129	6 .086	4 .057	10 .143	4 .057	3 .043	8 .114	14 .200	0 .000
Unsuccessful	0	0	0	0	0	0	0	0	0	0

Table 21a.--Corrections and Phonemic Proximity of Non-transformation Miscues for Grades Two, Four and Six

Correction	Phonemic Proximity									
	No similarity	Common sounds	Key elements	Key sounds	Similar sounding	Two non-consecutive differences	Two phoneme differences	One phoneme difference	Morphophonemic shift	Homophones
	Grade 2									
No attempt	6 .090	0 .000	15 .224	7 .105	3 .045	3 .045	12 .179	21 .313	0 .000	0 .000
Correction	5 .152	3 .091	3 .091	2 .061	3 .091	1 .030	10 .303	6 .182	0 .000	0 .000
Unsuccessful	0 .000	1 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
	Grade 4									
No attempt	6 .050	7 .059	9 .076	35 .294	6 .050	5 .042	15 .126	35 .294	1 .008	0 .000
Correction	5 .185	2 .074	4 .148	4 .148	0 .000	0 .000	3 .111	9 .333	0 .000	0 .000
Unsuccessful	0 .000	0 .000	0 .000	8 .500	3 .188	2 .125	1 .063	2 .125	0 .000	0 .000
	Grade 6									
No attempt	48 .149	16 .050	18 .056	13 .040	18 .056	13 .040	42 .130	149 .461	6 .019	0 .000
Correction	10 .152	4 .061	7 .106	8 .121	1 .015	3 .046	5 .076	28 .424	0 .000	0 .000
Unsuccessful	0 .000	1 .100	0 .000	1 .100	0 .000	0 .000	0 .000	8 .800	0 .000	0 .000

Table 21b.--Corrections and Phonemic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Correction	Phonemic Proximity									
	No similarity	Common sounds	Key elements	Key sounds	Similar sounding	Two non-consecutive differences	Two phoneme differences	One phoneme difference	Morphophonemic shift	Homophones
	Grade 2									
No attempt	36 .439	2 .024	9 .110	6 .073	3 .037	1 .012	17 .207	8 .098	0 .000	0 .000
Correction	25 .385	1 .015	13 .200	5 .077	4 .062	0 .000	2 .031	15 .231	0 .000	0 .000
Unsuccessful	0 .000	1 .500	0 .000	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
	Grade 4									
No attempt	45 .344	4 .031	11 .084	9 .069	2 .015	1 .008	19 .145	40 .305	0 .000	0 .000
Correction	27 .519	1 .019	6 .115	2 .039	1 .019	1 .019	6 .115	8 .154	0 .000	0 .000
Unsuccessful	0	0	0	0	0	0	0	0	0	0
	Grade 6									
No attempt	52 .284	13 .071	23 .126	14 .077	10 .055	7 .038	29 .159	34 .186	1 .006	0 .000
Correction	25 .357	9 .129	7 .100	5 .071	5 .071	1 .014	7 .100	10 .143	1 .014	0 .000
Unsuccessful	0	0	0	0	0	0	0	0	0	0

Grammatical Function of Expected Response and Miscue

Table 22 indicates the expected and observed grammatical function for re-transformation miscues. By definition, all of the non-transformation miscues (with the exception of any omissions caused by failure to attack unknown words) are miscues in which the grammatical function of the text was retained. These non-transformation miscues demonstrate a very strong control, on the part of the subjects, of the structures of the language.

Even within the re-transformation miscues, there is a tendency to retain grammatical function with the structural changes involving such shifts as tense or number, or for the intent of the original structure to be retained while alternate forms are deleted or added. The structure *...and the shadowy figure of Chip moving about the band...* becomes *...band of sheep...*, while the structure *My brother Andrew...* becomes *My baby brother Andrew....*

Moving from grade two to six, the tendency to retain grammatical function in re-transformation miscues increases and indicates the reader's increasing control of English structure.

With some frequency at each of the three grade levels, adjectives are replaced by nouns and function words.

Within the noun phrase of a sentence, nouns and adjectives are able to follow determiners with equal regularity. It is possible to say, the sheep dog (determiner adjective noun) or the dog (determiner noun). No prior cue aids the reader in anticipating either an adjective or a noun.

Adverbs occur in the text with less frequency for the second and fourth graders, but at the sixth grade level, adverbs are replaced with some frequency by verbs, adjectives and function words.

Within the verb phrase, an adjective, adverb or function word has equal possibility of following the verb. The structure *The sheep dog is...* can be completed by *hungry* (adjective), or *at his post* (prepositional phrase introduced by function word). The structure *The coyotes ran...* can be completed by *at the dog* (prepositional phrase), *rapidly* (adverb) or *home* (noun functioning as direct object).

Miscues which involve a change in grammatical function will tend to occur at the points of syntactic structure where alternate functions are equally possible.

Table 22. --Expected Grammatical Function and Observed Grammatical Function of Re-transformation Miscues for Grades Two, Four and Six

Expected Grammatical Function	Observed Grammatical Function					
	Noun	Verb	Adjective	Adverb	Function word	Indeterminate
	Grade 2					
Noun	14 .560	2 .080	3 .120	0 .000	6 .240	0 .000
Verb	0 .000	20 .952	0 .000	0 .000	1 .048	0 .000
Adjective	3 .500	0 .000	0 .000	2 .333	1 .167	0 .000
Adverb	0 .000	0 .000	1 .167	4 .667	1 .167	0 .000
Function word	12 .177	3 .044	0 .000	1 .015	51 .750	1 .015
Indeterminate	0 .000	0 .000	0 .000	0 .000	1 1.00	0 .000
	Grade 4					
Noun	38 .844	3 .067	0 .000	0 .000	4 .089	0 .000
Verb	2 .057	25 .714	4 .114	1 .029	2 .057	1 .029
Adjective	2 .400	0 .000	2 .400	0 .000	1 .200	0 .000
Adverb	4 .667	0 .000	0 .000	2 .333	0 .000	0 .000
Function word	6 .085	1 .014	0 .000	0 .000	64 .901	0 .000
Indeterminate	0	0	0	0	0	0

Table 22. -- Continued

Expected Grammatical Function	Observed Grammatical Function					
	Noun	Verb	Adjective	Adverb	Function word	Indeterminate
			Grade 6			
Noun	24 .600	0 .000	8 .200	0 .000	8 .200	0 .000
Verb	4 .125	21 .656	0 .000	1 .031	5 .156	1 .031
Adjective	4 .267	0 .000	4 .267	2 .133	5 .333	0 .000
Adverb	1 .077	4 .308	3 .231	2 .154	3 .231	0 .000
Function word	2 .017	2 .017	2 .017	1 .009	109 .924	2 .017
Indeterminate	0	0	0	0	0	0

Corrections and Expected Grammatical Function

Corrections and expected grammatical function are examined in Tables 23a and b.

At the fourth and sixth grade levels, there is a fairly substantial number of unsuccessfully corrected non-transformation miscues. These tend to be instances where the reader is centering in upon an unknown word and using graphic and phonemic cues for attack - /disdenectly/ for distinctly, /quover/ for quiver.

When the miscue involves a re-transformation, there is, for the second graders, a tendency not to correct any grammatical function except noun. A large number of the noun function re-transformation miscues that they correct involve a pronominal, suggesting that there is greater psychological as well as grammatical complexity involving pronouns as compared to nouns. Their general tendency not to correct re-transformation miscues involving the other grammatical structures also indicates confusion over structural complexity for them.

At the fourth and sixth grade levels, there is a slight tendency not to correct re-transformation miscues when the expected response involves a noun or function word and a tendency to correct when verbs, adjectives and adverbs are involved.

The tendency to correct those involving verbs, adjectives and adverbs is directly related to the fact that these functions (as discussed in a previous section) can occur at pivotal points in structure allowing for the increased occurrence of substitutions across grammatical functions.

As a structure becomes more complex, the number of points at which miscueing can occur increases. Examples in the previous section indicated that there are juncture points in English sentence structure where the occurrence of alternate structures is more likely. At these points, miscues involving grammatical re-transformations increase and with them is the increased possibility of creating an unacceptable structure - The puppies were being... for The puppies were sleeping, and she gave her attention to her left forepaw from which two toes were missing. Where unacceptable structures are produced, the tendency to correct increases for the fourth and sixth grade readers. Two key problems are involved in these miscues. One is the possibility of making a prediction about subsequent elements in a complex structure. The other problem is recovering from such unsuccessful predictions. Effective readers may be better able to make successful first guesses. But all readers will encounter some problems at these structural junctures, and therefore, what will distinguish a proficient reader is his ability to recover.

Table 23a.--Corrections and Expected Grammatical Functions of Non-transformation Miscues For Grades Two, Four and Six

Corrections	Expected Grammatical Function					
	Noun	Verb	Adjective	Adverb	Function word	Indeterminate
Grade 2						
No attempt	20 .286	15 .214	11 .157	7 .100	17 .243	0 .000
Correction	11 .333	10 .303	4 .121	2 .061	6 .182	0 .000
Unsuccessful	1 1.00	0 .000	0 .000	0 .000	0 .000	0 .000
Grade 4						
No attempt	39 .328	25 .210	18 .151	6 .050	18 .151	13 .109
Correction	11 .407	3 .111	4 .148	2 .074	5 .185	2 .074
Unsuccessful	3 .188	2 .125	2 .125	2 .125	0 .000	7 .438
Grade 6						
No attempt	114 .357	53 .166	44 .138	28 .088	80 .251	0 .000
Correction	24 .375	12 .188	11 .172	2 .031	15 .234	0 .000
Unsuccessful	2 .200	2 .200	3 .300	2 .200	1 .100	0 .000

Table 23b.--Corrections and Expected Grammatical Functions of Re-transformation Miscues For Grades Two, Four and Six

Corrections	Expected Grammatical Function					
	Noun	Verb	Adjective	Adverb	Function word	Indeterminate
	Grade 2					
No attempt	15	17	6	11	72	0
	.124	.141	.050	.091	.595	.000
Correction	19	10	2	2	48	1
	.232	.122	.024	.024	.585	.012
Unsuccessful	1	0	1	1	0	0
	.333	.000	.333	.333	.000	.000
	Grade 4					
No attempt	45	24	9	7	89	0
	.259	.138	.052	.040	.512	.000
Correction	16	14	5	5	27	0
	.239	.209	.075	.075	.403	.000
Unsuccessful	0	0	0	0	0	0
	Grade 6					
No attempt	36	23	9	11	159	0
	.151	.097	.038	.046	.668	.000
Correction	9	16	9	7	35	0
	.118	.211	.118	.092	.461	.000
Unsuccessful	0	0	0	0	0	0

Correction, Type and Level

There are no startling relationships revealed in examining correction, type and level. The significance of the correction behavior at each level is not involved with the type of miscue, but rather with the cause of the miscue. Those which are related to confusion over structure and/or meaning tend to be corrected. Those that involve alternate structures tend not to be corrected (see Tables 24a-f).

Some substitution miscues at the sub-morphemic level included when for then, drooped for dropped, gold for cold, backsaddle for packsaddle. Of the examples cited, all were syntactically acceptable within the text and only one (gold for cold) was not semantically acceptable. The sub-morphemic miscues of proficient readers tend to involve other grammatical levels, to retain grammatical function and to have some meaning proximity to the text.

There were a few instances where consistent pronunciation difficulties at the phonemic level had no affect upon meaning or syntax. Most of the sixth grade readers pronounced ewe as /ow/ and knolls as /nəhls/ while several of the fourth graders said /typakal/ for typical throughout their reading while having control of the concepts involved.

Substitutions at the bound morpheme level tend not to be corrected. These figures are directly related to the fact that omissions of inflectional endings which are dialect related such as dog for dogs, help for helped, are marked as substitutions of the null form for the inflected form. Dialect miscues tend not to be corrected.

Bound morpheme insertions or deletions involving faulty anticipation of structure will tend to be corrected. Urgently she pawed the ground... becomes Urgently her paw and... with paw moving from a verb to a noun function and the inflectional ending being dropped.

The word and free morpheme levels, due to the fact that these are overlaping categories (word being a graphic unit and morpheme a phonological unit), tend to have the same results. Substitutions at these levels, tend to change meaning - sheep for Chip, the roast for the worst - and so tend to be corrected.

Insertions at the word level - The coyotes nimbly leaped on to opposite sides... for ...to opposite sides..., ...my baby brother for ...my brother... - often involve substitutions at the phrase level of alternate or optional forms and are not corrected.

The non-word category tends not to be corrected because these miscues represent phonemic attacks upon words which the reader either does not know or recognize in written form. If the first attack upon such words is not successful, these readers tend to move on. They attack the word again each time it appears and use story context where possible.

Substitutions and omissions at the phrase level which involve mistaken anticipation of structure tend to be corrected - Her eyes became soft and... for Her eyes became soft with..., Might as well study what... for Might as well study word....

At each of the levels, correction is related to confusion over meaning and/or structure.

Table 24a.--Correction Attempts, Type and Level of Non-transformation Miscues for Grade Two

Correction	Miscue Type					
	Not involved	Substitution	Insertion	Omission	Reversal	Non-word
Sub-morphemic						
No attempt	36 .514	21 .300	2 .029	10 .143	1 .014	
Correction	21 .618	5 .147	4 .118	4 .118	0 .000	
Bound morpheme						
No attempt	64 .914	2 .029	2 .029	2 .029	0 .000	
Correction	31 .912	2 .059	0 .000	1 .029	0 .000	
Free morpheme						
No attempt	3 .043	63 .900	1 .014	3 .043	0 .000	
Correction	3 .088	29 .853	0 .000	1 .029	1 .029	
Word						
No attempt	0 .000	54 .771	0 .000	3 .043	0 .000	13 .186
Correction	0 .000	29 .853	0 .000	0 .000	1 .029	4 .118
Phrase						
No attempt	65 .929	4 .057	0 .000	1 .014	0 .000	
Correction	31 .912	2 .059	0 .000	0 .000	1 .029	
Clause						
No attempt	67 .957	3 .043	0 .000	0 .000	0 .000	
Correction	34 1.00	0 .000	0 .000	0 .000	0 .000	
Sentence						
No attempt	69 1.00	0 .000	0 .000	0 .000	0 .000	
Correction	34 1.00	0 .000	0 .000	0 .000	0 .000	

Table 24b.--Correction Attempts, Type and Level of Re-transformation Miscues for Grade Two

Correction	Miscue Type Not involved	 Substitution	 Insertion	 Omission	 Reversal	 Non-word
Sub-morphemic						
No attempt	125 .781	9 .056	9 .056	17 .106	0 .000	
Correction	76 .753	14 .139	2 .020	9 .089	0 .000	
Bound morpheme						
No attempt	139 .842	12 .073	5 .030	9 .055	0 .000	
Correction	83 .847	2 .020	4 .041	8 .082	1 .010	
Free morpheme						
No attempt	23 .161	50 .350	16 .112	53 .371	1 .007	
Correction	7 .077	53 .582	4 .044	24 .264	3 .033	
Word						
No attempt	2 .014	71 .497	16 .112	53 .371	1 .007	0 .000
Correction	0 .000	60 .659	4 .044	23 .253	4 .044	0 .000
Phrase						
No attempt	42 .240	110 .629	12 .069	10 .057	1 .006	
Correction	23 .221	64 .615	9 .087	4 .039	4 .039	
Clause						
No attempt	157 .892	7 .040	2 .011	10 .057	0 .000	
Correction	87 .837	8 .077	0 .000	8 .077	1 .010	
Sentence						
No attempt	173 .983	0 .000	3 .017	0 .000	0 .000	
Correction	102 .981	1 .010	0 .000	1 .010	0 .000	

Table 24c.--Correction Attempts, Type and Level of Non-transformation Miscues for Grade Four

Correction	Miscue Type					
	Not involved	Substitution	Insertion	Omission	Reversal	Non-word
Sub-morphemic						
No attempt	90 .750	22 .183	6 .050	1 .008	1 .008	
Correction	20 .714	6 .214	0 .000	2 .071	0 .000	
Bound morpheme						
No attempt	106 .883	4 .033	2 .017	8 .067	0 .000	
Correction	27 .964	0 .000	0 .000	1 .036	0 .000	
Free morpheme						
No attempt	9 .075	108 .900	0 .000	3 .025	0 .000	
Correction	0 .000	27 1.00	0 .000	0 .000	0 .000	
Word						
No attempt	0 .000	77 .642	0 .000	1 .008	0 .000	42 .350
Correction	0 .000	22 .815	0 .000	0 .000	0 .000	5 .185
Phrase						
No attempt	117 .975	3 .025	0 .000	0 .000	0 .000	
Correction	27 .964	0 .000	0 .000	0 .000	1 .036	
Clause						
No attempt	120 1.00	0 .000	0 .000	0 .000	0 .000	
Correction	28 1.00	0 .000	0 .000	0 .000	0 .000	
Sentence						
No attempt	120 1.00	0 .000	0 .000	0 .000	0 .000	
Correction	28 1.00	0 .000	0 .000	0 .000	0 .000	

Table 24d.--Correction Attempts, Type and Level of Re-transformation Miscues for Grade Four

Correction	Miscue Type Not involved	Substitution	Insertion	Omission	Reversal	Non-word
Sub-morphemic						
No attempt	169 .790	9 .042	4 .019	31 .145	1 .005	
Correction	69 .873	4 .051	2 .025	4 .051	0 .000	
Bound morpheme						
No attempt	143 .704	33 .163	5 .025	21 .103	1 .005	
Correction	66 .846	6 .077	0 .000	6 .077	0 .000	
Free morpheme						
No attempt	38 .189	75 .373	33 .164	55 .274	0 .000	
Correction	8 .108	38 .514	7 .095	21 .284	0 .000	
Word						
No attempt	0 .000	117 .582	27 .134	56 .279	0 .000	1 .005
Correction	0 .000	46 .622	7 .095	21 .284	0 .000	0 .000
Phrase						
No attempt	69 .295	146 .624	8 .034	8 .034	3 .013	
Correction	21 .239	57 .648	6 .068	2 .023	2 .023	
Clause						
No attempt	193 .821	18 .077	8 .034	15 .064	1 .004	
Correction	68 .773	6 .068	2 .023	12 .136	0 .000	
Sentence						
No attempt	231 .983	2 .009	1 .004	1 .004	0 .000	
Correction	88 1.00	0 .000	0 .000	0 .000	0 .000	

Table 24e.--Correction Attempts, Type and Level of Non-transformation Miscues for Grade Six

Correction	Miscue Type					
	Not involved	Substitution	Insertion	Omission	Reversal	Non-word
Sub-morphemic						
No attempt	127 .396	123 .383	32 .100	36 .112	3 .009	
Correction	34 .515	18 .273	5 .076	8 .121	1 .015	
Bound morpheme						
No attempt	281 .875	17 .053	8 .025	15 .047	0 .000	
Correction	59 .894	0 .000	1 .015	6 .091	0 .000	
Free morpheme						
No attempt	33 .103	280 .872	0 .000	7 .022	1 .003	
Correction	3 .046	59 .908	0 .000	3 .046	0 .000	
Word						
No attempt	3 .009	225 .701	0 .000	1 .003	1 .003	91 .284
Correction	0 .000	54 .831	0 .000	0 .000	0 .000	11 .169
Phrase						
No attempt	318 .982	5 .015	0 .000	0 .000	1 .003	
Correction	65 .985	1 .015	0 .000	0 .000	0 .000	
Clause						
No attempt	323 .997	1 .003	0 .000	0 .000	0 .000	
Correction	65 .985	1 .015	0 .000	0 .000	0 .000	
Sentence						
No attempt	324 1.00	0 .000	0 .000	0 .000	0 .000	
Correction	66 1.00	0 .000	0 .000	0 .000	0 .000	

Table 24f.--Correction Attempts, Type and Level of Re-transformation Miscues for Grade Six

Correction	Miscue Type					
	Not involved	Substitution	Insertion	Omission	Reversal	Non-word
Sub-morphemic						
No attempt	276 .826	18 .054	13 .039	27 .081	0 .000	
Correction	67 .779	13 .151	0 .000	6 .070	0 .000	
Bound morpheme						
No attempt	283 .842	39 .116	7 .021	7 .021	0 .000	
Correction	76 .864	5 .057	3 .034	4 .046	0 .000	
Free morpheme						
No attempt	55 .172	114 .356	76 .238	75 .234	0 .000	
Correction	10 .118	49 .577	6 .071	19 .224	1 .012	
Word						
No attempt	9 .028	157 .489	77 .240	76 .237	0 .000	2 .006
Correction	1 .012	56 .667	6 .071	18 .214	1 .012	2 .024
Phrase						
No attempt	53 .153	257 .741	21 .061	13 .038	3 .009	
Correction	13 .138	69 .734	4 .043	7 .075	1 .011	
Clause						
No attempt	298 .849	27 .077	11 .031	8 .023	7 .020	
Correction	80 .851	7 .075	4 .043	3 .032	0 .000	
Sentence						
No attempt	340 .969	8 .023	1 .003	1 .003	1 .003	
Correction	92 .979	2 .021	0 .000	0 .000	0 .000	

Correction, Syntactic and Semantic Proximity

The trends for correction and syntactic proximity are the same for the three grade levels and for both non-transformation and re-transformation miscues (see Tables 25a and b).

Sixty-six percent, 73% and 81% of the non-transformation miscues and 62%, 73% and 79% of the re-transformation miscues made at each of the three grade levels are not corrected. This occurrence is closely associated with the fact that 95%, 99% and 97% of the non-transformation miscues and 47%, 52% and 58% of the re-transformation miscues at each of the three grade levels are within the range of high syntactic proximity.

Within high and moderate syntactic proximity, many of the miscues can involve the reader's preference for optional surface structure changes which do not affect meaning. *The helpless animal at her feet brought her hunger to mind...* becomes *The helpless animal at her feet brought her hunger to her mind...*, *The next noon,...* for *The next day at noon,...*.

Other miscues can involve only minor syntactic changes that produce minor shifts in connotation which cause no disruption to the story. *The routine was different and she could not understand this rush to keep the band moving.* becomes *...and she did not understand...*, *You don't have to be a genius to win the prize.* becomes *... to win a prize.*

Miscues involving minor acceptable changes in syntactic structure combined with minor acceptable changes in meaning generate little need for corrections.

At each of the three grade levels and for both non-transformation and re-transformation miscues, the tendency to correct increases as the syntactic proximity of the miscue decreases.

Tables 26a and b indicate correction attempts in relation to the semantic proximity of the miscue. The trends for semantic proximity and correction are similar to but weaker than those for syntactic proximity and correction. The tendency to correct increases as the semantic proximity decreases. As the trend to retain semantic proximity is weaker than the trend to retain syntactic proximity, the trend to correct in relation to semantic proximity is weaker than for syntactic proximity. The largest percentage of corrections, at each of the three grade levels, involves miscues of low semantic proximity.

A small number of unsuccessful corrections at the fourth and sixth grade levels occur for miscues that have no semantic relationship to the text material. In all instances, these miscues involve readers' unsuccessful attempts at attacking unfamiliar words. Examples include *severed*, *procedure*, *succulent*, *amphitheater*, *philosophical*, *sinewy*, and *chemist*.

The reader attempts to reconstruct the meaning of the author and must work at the deep structure level - the point at which the author fuses his meaning with the structural patterns of his language. If his attempts have enough proximity to the meaning of the author as he reconstructs it, there is no need for him to correct.

Table 25a.--Correction and Syntactic Proximity of Non-transformation Miscues for Grades Two, Four and Six

Correction	Syntactic Proximity									
	Unrelated	Little in common	Key element	Major change	Minor change	Phrase structure & intonation	Within phrase structure	Person, tense, number	Function word etc.	No change
					Grade 2					
No attempt	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	2 .029	10 .143	20 .286	38 .543
Correction	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	3 .088	9 .265	7 .206	15 .441
Unsuccessful	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 1.00	0 .000
					Grade 4					
No attempt	0 .000	0 .000	0 .000	0 .000	1 .008	0 .000	1 .008	8 .067	13 .108	97 .808
Correction	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	2 .071	5 .179	21 .750
Unsuccessful	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	16 1.00
					Grade 6					
No attempt	1 .003	0 .000	0 .000	0 .000	0 .000	0 .000	7 .022	15 .046	68 .210	233 .719
Correction	0 .000	0 .000	0 .000	0 .000	2 .030	0 .000	1 .015	2 .030	15 .227	46 .697
Unsuccessful	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .100	9 .900

Table 25b.--Correction and Syntactic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Correction	Syntactic Proximity									
	Unrelated	Little in common	Key element	Major change	Minor change	Phrase structure & intonation	Within phrase structure	Person, tense, number	Function word etc.	No change
Grade 2										
No attempt	0 .000	0 .000	0 .000	19 .108	16 .091	6 .034	38 .216	30 .171	66 .375	1 .006
Correction	1 .010	1 .010	0 .000	14 .136	17 .165	8 .078	31 .301	8 .078	22 .214	1 .010
Unsuccessful	0 .000	0 .000	0 .000	0 .000	1 .200	0 .000	3 .600	0 .000	1 .200	0 .000
Grade 4										
No attempt	0 .000	0 .000	0 .000	23 .098	22 .094	8 .034	46 .196	47 .200	77 .328	12 .051
Correction	0 .000	0 .000	0 .000	9 .102	22 .250	0 .000	23 .261	12 .136	21 .239	1 .011
Unsuccessful	0 .000	0 .000	0 .000	1 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Grade 6										
No attempt	1 .003	1 .003	0 .000	10 .029	60 .171	9 .026	42 .120	57 .162	169 .482	2 .006
Correction	2 .021	1 .011	1 .011	6 .063	40 .421	0 .000	20 .211	3 .032	21 .221	1 .011
Unsuccessful	0	0	0	0	0	0	0	0	0	0

Table 26a.--Corrections and Semantic Proximity of Non-transformation Miscues for Grades Two, Four and Six

Correction	Semantic Proximity									
	Unrelated	Vaguely related	Appropriate unrelated	Partial association	Some association	Antonym	Associated	Slight change	Synonym	No change
					Grade 2					
No attempt	9 .129	0 .000	1 .014	2 .029	1 .014	3 .043	9 .129	36 .514	0 .000	9 .129
Correction	5 .147	2 .059	3 .088	4 .118	0 .000	1 .029	2 .059	10 .294	1 .029	6 .177
Unsuccessful	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 1.00
					Grade 4					
No attempt	51 .425	1 .008	5 .042	4 .033	1 .008	1 .008	2 .017	31 .258	3 .025	21 .175
Correction	11 .393	0 .000	1 .036	3 .107	0 .000	0 .000	4 .143	5 .179	2 .071	2 .071
Unsuccessful	16 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
					Grade 6					
No attempt	107 .330	4 .012	13 .040	20 .062	2 .006	7 .022	9 .028	51 .157	20 .062	91 .281
Correction	19 .288	2 .030	3 .046	13 .197	0 .000	0 .000	2 .030	7 .106	1 .015	19 .288
Unsuccessful	9 .900	0 .000	0 .000	1 .100	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000

Table 26b.--Corrections and Semantic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Correction	Semantic Proximity									
	Unrelated	Vaguely related	Appropriate unrelated	Partial association	Some association	Antonym	Associated	Slight change	Synonym	No change
					Grade 2					
No attempt	3 .017	1 .006	0 .000	40 .227	6 .034	2 .011	7 .040	80 .455	0 .000	37 .210
Correction	4 .039	0 .000	0 .000	65 .625	2 .019	0 .000	4 .039	20 .192	0 .000	9 .087
Unsuccessful	1 .200	0 .000	0 .000	3 .600	0 .000	0 .000	0 .000	1 .200	0 .000	0 .000
					Grade 4					
No attempt	2 .009	4 .017	1 .004	37 .157	6 .026	6 .026	9 .038	123 .523	1 .004	46 .196
Correction	1 .011	1 .011	0 .000	43 .489	0 .000	0 .000	2 .023	33 .375	0 .000	8 .091
Unsuccessful	0 .000	0 .000	0 .000	1 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
					Grade 6					
No attempt	4 .011	6 .017	4 .011	73 .209	8 .023	3 .009	2 .006	134 .383	0 .000	116 .331
Correction	4 .042	2 .021	2 .021	67 .705	2 .021	0 .000	1 .011	10 .105	0 .000	7 .074
Unsuccessful	0	0	0	0	0	0	0	0	0	0

Syntactic Acceptability, Semantic Acceptability and Graphic Proximity

With very few exceptions, the non-transformation miscues of these proficient readers at each of the three grade levels were totally syntactically acceptable (see Table 27a). Those few that were not, were syntactically acceptable with prior structure. At the same time, most of these miscues had either moderate or high graphemic proximity with the trend toward high proximity increasing through the grades.

The categories of acceptable with prior and totally acceptable are again the most significant for re-transformation miscues at each grade level (see Table 27b).

For the second graders, no graphic similarity and low graphic proximity are most frequently associated with re-transformation miscues. As these young readers become involved in syntactic concerns, their use of graphic cues drops considerably.

By the fourth and sixth grades, the trends for graphic proximity in re-transformation miscues are weaker than but similar to those already described for non-transformation miscues. At both these grade levels, the strongest trend toward high graphic proximity is associated with partial syntactic acceptability while more moderate use of graphic skills is associated with re-transformation miscues that are totally syntactically acceptable.

A small number of miscues in the sub-categories of total syntactic acceptability and acceptable with prior have no graphic proximity. A large percentage of these miscues involve concerns for structure and revolve around substitutions of function words such as the for an, for for the, when for and. A smaller percentage are concerned with meaning association, animal for dog, came for went. In both instances, graphic similarity is less important momentarily than strong concern for structure and/or meaning in relation to prior text. The only difference between those that turn out partially acceptable and those that have total acceptability is the accuracy of the guess.

When semantic acceptability and graphic proximity of non-transformation miscues is examined (see Table 28a), there is a tendency, at each of the three grade levels, to have high graphic proximity regardless of semantic acceptability. At each of the grade levels, this trend is strongest for miscues that have no semantic acceptability and suggests an overriding concern for graphic proximity when there's confusion over meaning. Whether such graphic concern leads to semantic confusion cannot be determined.

At the same time, the trend toward high graphic proximity for totally semantically acceptable non-transformation miscues gains in strength from grades two through six, suggesting that the older readers are developing a more successful use of integration of cue systems in their reading process.

Trends for semantic acceptability and graphic proximity of re-transformation miscues are similar to those for syntactic acceptability and graphic proximity (see Table 28b).

For the second graders, no graphic similarity and low graphic similarity are most frequently associated with re-transformation miscues. As these young readers become involved in syntactically related semantic concerns their use of graphic cues drops considerably.

By the fourth and sixth grades, the trend is toward high proximity in re-transformation miscues. At both these grades, the strongest trend toward high proximity is associated with unaccepable or partial semantic acceptability while more moderate use of graphic cues is associated with total semantic acceptability. This is consistent with the theoretical view that successful reading requires integration of cue systems.

The trend toward high graphic proximity and total semantic acceptability increases through the grades suggesting that, as with syntactic acceptability, the older readers are more successfully integrating their reading skills.

The trends for high semantic acceptability accompanied by high graphic proximity are similar to but weaker than those for syntactic acceptability and high graphic proximity.

Table 27a.--Syntactic Acceptability and Graphic Proximity of Non-transformation Miscues for Grade Two, Four and Six

Syntactic Acceptability	Graphic Proximity									
	No similarity	Key elements	Final	Beginning	Beginning middle	Beginning final	Beginning middle, final	Similar spelling	One grapheme difference	Homographs
Grade 2										
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	1 .333	1 .333	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .333	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	7 .044	9 .057	3 .019	11 .069	18 .113	29 .182	17 .107	2 .013	63 .396	0 .000
Grade 4										
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	0 .000	1 .250	0 .000	0 .000	0 .000	1 .250	0 .000	0 .000	2 .500	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	5 .051	9 .092	4 .041	12 .122	7 .071	15 .153	7 .071	5 .051	34 .347	0 .000
Grade 6										
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	0 .000	3 .300	0 .000	1 .100	3 .300	0 .000	0 .000	0 .000	3 .300	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	32 .082	24 .062	9 .023	15 .039	18 .046	31 .080	24 .062	54 .139	179 .459	4 .010

Table 27b.--Syntactic Acceptability and Graphic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Syntactic Acceptability	Graphic Proximity									
	No similarity	Key elements	Final	Beginning	Beginning middle	Beginning final	Beginning middle, final	Similar spelling	One grapheme difference	Homographs
	Grade 2									
Unacceptable	0 .000	0 .000	1 .167	0 .000	0 .000	2 .333	0 .000	1 .167	2 .333	0 .000
Acceptable prior	10 .200	11 .220	4 .080	8 .160	5 .100	1 .020	2 .040	0 .000	9 .180	0 .000
Acceptable after	0 .000	0 .000	0 .000	1 .111	7 .778	0 .000	0 .000	0 .000	1 .111	0 .000
Acceptable in sentence	1 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Totally acceptable	35 .407	5 .058	4 .047	9 .105	11 .128	4 .047	2 .023	2 .023	14 .163	0 .000
	Grade 4									
Unacceptable	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .500	0 .000
Acceptable prior	15 .441	0 .000	2 .059	6 .177	3 .088	1 .029	0 .000	0 .000	7 .206	0 .000
Acceptable after	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .500	0 .000
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	48 .331	6 .041	2 .014	12 .083	16 .110	12 .083	3 .021	1 .007	43 .297	2 .014
	Grade 6									
Unacceptable	0 .000	1 .167	0 .000	0 .000	0 .000	0 .000	1 .167	2 .333	2 .333	0 .000
Acceptable prior	20 .196	17 .167	7 .069	4 .039	14 .137	6 .059	3 .029	14 .137	17 .167	0 .000
Acceptable after	0 .000	1 .111	0 .000	1 .111	1 .111	0 .000	1 .111	3 .333	2 .222	0 .000
Acceptable in sentence	0 .000	0 .000	0 .000	0 .000	0 .000	1 .500	0 .000	0 .000	1 .500	0 .000
Totally acceptable	28 .209	13 .097	4 .030	13 .097	22 .164	14 .105	3 .022	7 .052	30 .224	0 .000

Table 28a.--Semantic Acceptability and Graphic Proximity of Non-transformation Miscues for Grades Two, Four and Six

Semantic Acceptability	Graphic Proximity									
	No similarity	Key elements	Final	Beginning	Beginning middle	Beginning final	Beginning middle, final	Similar spelling	One grapheme difference	Homographs
					Grade 2					
Unacceptable	0 .000	1 .071	0 .000	0 .000	0 .000	2 .143	3 .214	2 .143	6 .429	0 .000
Acceptable prior	0 .000	1 .143	0 .000	0 .000	0 .000	2 .286	0 .000	0 .000	4 .571	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	1 .100	2 .200	0 .000	0 .000	0 .000	2 .200	1 .100	0 .000	4 .400	0 .000
Totally acceptable	4 .056	6 .085	4 .056	12 .169	7 .099	10 .141	3 .042	3 .042	22 .310	0 .000
					Grade 4					
Unacceptable	0 .000	0 .000	0 .000	2 .029	9 .130	13 .188	13 .188	1 .015	31 .449	0 .000
Acceptable prior	1 .200	1 .200	0 .000	0 .000	0 .000	1 .200	0 .000	0 .000	2 .400	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	2 1.00	0 .000
Totally acceptable	7 .081	9 .105	3 .035	9 .105	9 .105	15 .174	4 .047	1 .012	29 .337	0 .000
					Grade 6					
Unacceptable	0 .000	0 .000	0 .000	0 .000	5 .039	14 .109	10 .078	20 .155	80 .620	0 .000
Acceptable prior	0 .000	5 .238	0 .000	3 .143	4 .191	1 .048	0 .000	2 .095	6 .286	0 .000
Acceptable after	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 1.00	0 .000
Acceptable in sentence	0 .000	0 .000	0 .000	1 .067	0 .000	1 .067	2 .133	1 .067	8 .533	2 .133
Totally acceptable	32 .137	22 .094	9 .039	12 .051	12 .051	15 .064	12 .051	31 .133	87 .372	2 .009

Table 28b.--Semantic Acceptability and Graphic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Semantic Accept-ability	Graphic Proximity									
	No similarity	Key elements	Final	Beginning	Beginning middle	Beginning final	Beginning middle, final	Similar spelling	One grapheme difference	Homographs
					Grade 2					
Unaccept-able	0 .000	0 .000	1 .167	0 .000	0 .000	2 .333	0 .000	1 .167	2 .333	0 .000
Acceptable prior	12 .218	12 .218	4 .073	8 .146	5 .091	1 .018	2 .036	0 .000	11 .200	0 .000
Acceptable after	0 .000	0 .000	0 .000	1 .111	7 .778	0 .000	0 .000	0 .000	1 .111	0 .000
Acceptable in sentence	2 .333	0 .000	0 .000	0 .000	1 .167	0 .000	0 .000	0 .000	3 .500	0 .000
Totally acceptable	32 .421	4 .053	4 .053	9 .118	10 .132	4 .053	2 .026	2 .026	9 .118	0 .000
					Grade 4					
Unaccept-able	1 .200	0 .000	0 .000	0 .000	2 .400	0 .000	0 .000	0 .000	2 .400	0 .000
Acceptable prior	17 .415	1 .024	3 .073	6 .146	1 .024	1 .024	0 .000	0 .000	12 .293	0 .000
Acceptable after	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .500	0 .000
Acceptable in sentence	1 .333	1 .333	0 .000	0 .000	1 .333	0 .000	0 .000	0 .000	0 .000	0 .000
Totally acceptable	45 .341	4 .030	1 .008	12 .091	15 .114	12 .091	3 .023	1 .008	37 .280	2 .015
					Grade 6					
Unaccept-able	0 .000	1 .167	0 .000	0 .000	2 .333	0 .000	1 .167	1 .167	1 .167	0 .000
Acceptable prior	19 .181	18 .171	7 .067	5 .048	14 .133	6 .057	3 .029	14 .133	19 .181	0 .000
Acceptable after	0 .000	1 .125	0 .000	1 .125	1 .125	0 .000	1 .125	2 .250	2 .250	0 .000
Acceptable in sentence	0 .000	1 .250	0 .000	0 .000	0 .000	1 .250	0 .000	0 .000	2 .500	0 .000
Totally acceptable	29 .223	11 .085	4 .031	12 .092	20 .154	14 .108	3 .023	9 .069	28 .215	0 .000

Syntactic Acceptability, Semantic Acceptability and Phonemic Proximity

Almost all of the non-transformation miscues of these proficient readers at each of the three grade levels were totally syntactically acceptable (see Table 29a). Those few that were not, were syntactically acceptable with prior structure.

For the second and fourth grades, the large percentage of non-transformation miscues have low or moderate phonemic proximity to the text. By the sixth grade, there is a trend toward high phonemic proximity. The percentage of miscues with high phonemic proximity at each of the three levels is much below that for high graphic proximity - 29%, 29% and 49%, as compared to 41%, 40% and 61%.

The categories of syntactically acceptable with prior and totally acceptable are again the most significant for re-transformation miscues at each grade level (see Table 29b).

For the second graders, no phonemic similarity and low phonemic similarity are most frequently associated with re-transformation miscues. As they become involved in syntactic concerns, their use of phonemic cues drops considerably.

By the fourth and sixth grades, the trends are toward high phonemic proximity. They are similar to but weaker than the trends for high graphic proximity.

When semantic acceptability and phonemic proximity of non-transformation miscues is examined (see Table 30a), there is a trend toward low proximity for second and fourth grades and a trend toward high proximity for grade six.

Phonemic proximity for re-transformation miscues tends toward no proximity or low proximity at the second grade level and is almost evenly spread across the phonemic categories at the fourth and sixth grades (see Table 30b).

For both non-transformation and re-transformation miscues at the three grade levels, there is a moderate percentage of miscues that have no phonemic proximity to the text. As with graphic proximity and semantic acceptability, the reader's concern seems to be heavily centered upon structure and meaning in such miscues.

The complex relationship between graphic similarity and phonemic similarity where physical and psychological, kite and knolls can have initial graphic, but not initial phonemic similarity, seems to explain the less definite pattern created for phonemic proximity and acceptability.

Table 29a.--Syntactic Acceptability and Phonemic Proximity of Non-transformation Miscues for Grades Two, Four and Six

Syntactic Acceptability	Phonemic Proximity									
	No similarity	Common sounds	Key element	Key sounds	Similar sounding	Two Non-consecutive difference	Two phoneme difference	One phoneme difference	Morpho-phonemic shift	Homophones
					Grade 2					
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	1 .250	0 .000	0 .000	1 .250	0 .000	0 .000	2 .500	0 .000	0 .000	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	10 .102	4 .041	18 .184	8 .082	6 .061	4 .041	20 .204	28 .286	0 .000	0 .000
					Grade 4					
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	2 .667	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .333	0 .000	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	9 .057	9 .057	13 .082	47 .296	9 .057	7 .044	19 .120	45 .283	1 .006	0 .000
					Grade 6					
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	3 .300	2 .200	1 .100	1 .100	0 .000	0 .000	1 .100	2 .200	0 .000	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	55 .141	19 .049	24 .062	21 .054	19 .049	16 .041	46 .118	184 .472	6 .015	0 .000

Table 29b.--Syntactic Acceptability and Phonemic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Syntactic Acceptability	Phonemic Proximity									
	No similarity	Common sounds	Key element	Key sounds	Similar sounding	Two non-consecutive difference	Two phoneme difference	One phoneme difference	Morpho-phonemic shift	Homophones
	Grade 2									
Unacceptable	0 .000	0 .000	1 .167	2 .333	0 .000	0 .000	0 .000	3 .500	0 .000	0 .000
Acceptable prior	21 .429	2 .041	9 .184	4 .082	3 .061	0 .000	2 .041	8 .163	0 .000	0 .000
Acceptable after	0 .000	0 .000	2 .222	0 .000	1 .111	0 .000	5 .556	1 .111	0 .000	0 .000
Acceptable in sentence	1 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Totally acceptable	39 .454	3 .035	10 .116	6 .070	3 .035	1 .012	12 .140	12 .140	0 .000	0 .000
	Grade 4									
Unacceptable	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .500	0 .000	0 .000
Acceptable prior	17 .500	1 .029	5 .147	2 .059	0 .000	0 .000	3 .088	6 .177	0 .000	0 .000
Acceptable after	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .500	0 .000	0 .000
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	53 .366	4 .028	12 .083	9 .062	3 .021	2 .014	22 .152	40 .276	0 .000	0 .000
	Grade 6									
Unacceptable	1 .167	0 .000	1 .167	0 .000	1 .167	1 .167	0 .000	2 .333	0 .000	0 .000
Acceptable prior	38 .373	10 .098	12 .118	8 .078	6 .059	3 .029	12 .118	13 .128	0 .000	0 .000
Acceptable after	0 .000	0 .000	4 .444	0 .000	0 .000	1 .111	3 .333	0 .000	1 .111	0 .000
Acceptable in sentence	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .500	1 .500	0 .000	0 .000
Totally acceptable	39 .289	12 .089	13 .096	11 .082	8 .059	3 .022	20 .148	28 .207	1 .007	0 .000

Table 30a.--Semantic Acceptability and Phonemic Proximity of Non-transformation Miscues for Grades Two, Four and Six

Semantic Acceptability	Phonemic Proximity									
	No similarity	Common sounds	Key element	Key sounds	Similar sounding	Two non-consecutive difference	Two phoneme difference	One phoneme difference	Morpho-phonemic shift	Homophones
					Grade 2					
Unacceptable	0 .000	0 .000	1 .071	1 .071	0 .000	1 .071	5 .357	6 .429	0 .000	0 .000
Acceptable prior	1 .143	0 .000	0 .000	2 .286	1 .143	0 .000	2 .286	1 .143	0 .000	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	2 .200	1 .100	0 .000	1 .100	3 .300	0 .000	1 .100	2 .200	0 .000	0 .000
Totally acceptable	8 .113	3 .042	17 .239	5 .070	2 .028	3 .042	14 .197	19 .268	0 .000	0 .000
					Grade 4					
Unacceptable	0 .000	3 .044	2 .029	28 .406	5 .073	3 .044	8 .116	20 .290	0 .000	0 .000
Acceptable prior	2 .400	0 .000	0 .000	1 .200	0 .000	1 .200	0 .000	1 .200	0 .000	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0 .000	0 .000	0 .000	1 .500	0 .000	0 .000	0 .000	1 .500	0 .000	0 .000
Totally acceptable	9 .105	6 .070	11 .128	17 .198	4 .047	3 .035	11 .128	24 .279	1 .012	0 .000
					Grade 6					
Unacceptable	0 .000	3 .023	0 .000	10 .078	6 .047	8 .062	23 .178	79 .612	0 .000	0 .000
Acceptable prior	5 .238	2 .095	4 .191	2 .095	0 .000	0 .000	1 .048	7 .333	0 .000	0 .000
Acceptable after	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 1.00	0 .000	0 .000
Acceptable in sentence	0 .000	0 .000	1 .067	1 .067	2 .133	0 .000	3 .200	8 .533	0 .000	0 .000
Totally acceptable	53 .227	16 .068	20 .086	9 .039	11 .047	8 .034	20 .086	91 .389	6 .026	0 .000

Table 30b.--Semantic Acceptability and Phonemic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Semantic Acceptability	Phonemic Proximity									
	No similarity	Common sounds	Key element	Key sounds	Similar sounding	Two non-consecutive difference	Two phoneme difference	One phoneme difference	Morpho-phonemic shift	Homophones
					Grade 2					
Unacceptable	0 .000	0 .000	1 .167	2 .333	0 .000	0 .000	0 .000	3 .500	0 .000	0 .000
Acceptable prior	24 .444	2 .037	9 .167	4 .074	3 .056	0 .000	2 .037	10 .185	0 .000	0 .000
Acceptable after	0 .000	0 .000	2 .222	0 .000	1 .111	0 .000	5 .556	1 .111	0 .000	0 .000
Acceptable in sentence	4 .667	0 .000	0 .000	0 .000	1 .167	0 .000	0 .000	1 .167	0 .000	0 .000
Totally acceptable	33 .434	3 .040	10 .132	6 .079	2 .026	1 .013	12 .158	9 .118	0 .000	0 .000
					Grade 4					
Unacceptable	1 .200	0 .000	0 .000	1 .200	0 .000	0 .000	0 .000	3 .600	0 .000	0 .000
Acceptable prior	23 .561	1 .024	5 .122	3 .073	0 .000	0 .000	3 .073	6 .146	0 .000	0 .000
Acceptable after	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	1 .500	0 .000	0 .000
Acceptable in sentence	1 .333	0 .000	2 .667	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Totally acceptable	46 .349	4 .030	10 .076	7 .053	3 .023	2 .015	22 .167	38 .288	0 .000	0 .000
					Grade 6					
Unacceptable	1 .167	0 .000	1 .167	0 .000	2 .333	0 .000	1 .167	1 .167	0 .000	0 .000
Acceptable prior	38 .362	10 .095	13 .124	8 .076	6 .057	3 .029	12 .114	15 .143	0 .000	0 .000
Acceptable after	0 .000	0 .000	4 .500	0 .000	0 .000	1 .125	2 .250	0 .000	1 .125	0 .000
Acceptable in sentence	1 .250	0 .000	0 .000	0 .000	0 .000	0 .000	1 .250	2 .500	0 .000	0 .000
Totally acceptable	38 .290	12 .092	12 .092	11 .084	7 .053	4 .031	20 .153	26 .199	1 .008	0 .000

Syntactic Acceptability, Syntactic and Semantic Proximity

By definition, non-transformation miscues must either retain grammatical function or involve only minor changes such as substitutions of function words - ...in the store... for ...into the store... or ...which I saw... for ...that I saw. The syntactic proximity of all non-transformation miscues will be high.

When re-transformation miscues at each of the three levels are examined, those which are syntactically acceptable with prior tend to have moderate syntactic proximity - 66%, 63% and 69% (see Table 31). Those that have total syntactic acceptability tend to have high syntactic proximity - 59%, 63% and 72%. Syntactic proximity is higher for re-transformation miscues which are totally syntactically acceptable than for those which are partially acceptable.

In examining syntactic acceptability and semantic proximity for non-transformation miscues, the second graders actually have a larger percentage of miscues with high semantic proximity (62%) than do the fourth and sixth graders (39%, 48%) (see Table 32a). These figures are directly related to the larger percentage of semantically unrelated miscues for the fourth and sixth graders.

All of the semantically unrelated miscues for the fourth and sixth grades are non-word substitutions. The fourth grade story had lists of words from a dictionary which provided no context cues for the reader and increased the occurrence of non-words. Both the fourth and sixth grade texts had a large number of words which would be unlikely within the normal child's speaking vocabulary and which presented complex conceptualizations. A sample of the text words which were involved in non-word substitution include Badger, drowsiness, stolidly, descendant, philosophical, sinewy, imperial and intellectual.

At each of the grade levels, non-transformation miscues tend to have high semantic proximity.

High semantic proximity for totally syntactically acceptable re-transformation miscues runs 82%, 84% and 89%. There is a strong tendency for high semantic proximity in totally syntactically acceptable miscues which increases with the grade level of the readers in this study.

Semantic proximity of re-transformation miscues is higher than for non-transformation miscues (see Table 32b). Many of these miscues reflect the reader's choice of an alternate or optional surface level structure. For example, ...the grey blur of the sheep... becomes ...the grey blur of sheep... and ...so acute she could no longer lie still... becomes ...so acute that she could no longer lie still....

Table 31. --Syntactic Acceptability and Syntactic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Syntactic Acceptability	Syntactic Proximity									
	Unrelated	Little in common	Key element	Major change	Minor change	Phrase structure & intonation	Within phrase structure	Person, tense, number	Function word, etc.	No change
Grade 2										
Unacceptable	1 .111	0 .000	0 .000	1 .111	2 .222	2 .222	2 .222	0 .000	1 .111	0 .000
Acceptable prior	0 .000	0 .000	0 .000	15 .177	14 .165	6 .071	36 .424	4 .047	10 .118	0 .000
Acceptable after	0 .000	0 .000	0 .000	1 .077	0 .000	0 .000	5 .385	7 .539	0 .000	0 .000
Acceptable in sentence	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	2 1.00	0 .000	0 .000	0 .000
Totally acceptable	0 .000	1 .006	0 .000	19 .106	18 .100	7 .039	28 .156	27 .150	78 .433	2 .011
Grade 4										
Unacceptable	0 .000	0 .000	0 .000	1 .500	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000
Acceptable prior	0 .000	0 .000	0 .000	14 .200	20 .286	2 .029	22 .314	3 .043	8 .114	1 .014
Acceptable after	0 .000	0 .000	0 .000	1 .250	1 .250	0 .000	0 .000	1 .250	1 .250	0 .000
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	0 .000	0 .000	0 .000	18 .072	22 .088	6 .024	47 .188	56 .224	89 .356	12 .048
Grade 6										
Unacceptable	2 .250	1 .125	0 .000	1 .125	3 .375	0 .000	0 .000	0 .000	1 .125	0 .000
Acceptable prior	0 .000	0 .000	1 .008	10 .077	58 .446	2 .015	28 .215	10 .077	21 .162	0 .000
Acceptable after	0 .000	1 .071	0 .000	0 .000	5 .357	0 .000	0 .000	4 .286	4 .286	0 .000
Acceptable in sentence	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	2 .667	1 .333	0 .000
Totally acceptable	1 .003	0 .000	0 .000	6 .021	34 .116	8 .027	34 .116	44 .150	163 .556	3 .010

Table 32a.--Syntactic Acceptability and Semantic Proximity of Non-transformation Miscues for Grades Two, Four and Six

Syntactic Acceptability	Semantic Proximity									
	Unrelated	Vaguely related	Appropriate unrelated	Partial association	Some association	Antonym	Associated	Slight change	Synonym	No change
					Grade 2					
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	0 .000	0 .000	0 .000	4 .800	0 .000	0 .000	0 .000	1 .200	0 .000	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	15 .149	2 .020	4 .040	2 .020	1 .010	4 .040	11 .109	45 .446	1 .010	16 .158
					Grade 4					
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	0 .000	0 .000	0 .000	3 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	78 .485	1 .006	6 .037	4 .025	1 .006	1 .006	6 .037	36 .224	5 .031	23 .143
					Grade 6					
Unacceptable	0	0	0	0	0	0	0	0	0	0
Acceptable prior	1 .100	0 .000	0 .000	8 .800	0 .000	0 .000	0 .000	1 .100	0 .000	0 .000
Acceptable after	0	0	0	0	0	0	0	0	0	0
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	134 .343	6 .015	16 .041	26 .067	2 .005	7 .018	12 .031	57 .146	21 .054	110 .281

Table 32b.--Syntactic Acceptability and Semantic Proximity of Re-transformation Miscues for Grades Two, Four and Six

Syntactic Acceptability	Semantic Proximity									
	Unrelated	Vaguely related	Appropriate unrelated	Partial association	Some association	Antonym	Associated	Slight change	Synonym	No change
Grade 2										
Unacceptable	6 .667	0 .000	0 .000	0 .000	1 .111	0 .000	2 .222	0 .000	0 .000	0 .000
Acceptable prior	0 .000	0 .000	0 .000	82 .954	3 .035	0 .000	0 .000	1 .012	0 .000	0 .000
Acceptable after	0 .000	0 .000	0 .000	13 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Acceptable in sentence	0 .000	0 .000	0 .000	2 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Totally acceptable	2 .011	1 .006	0 .000	12 .067	6 .033	2 .011	10 .056	101 .561	0 .000	46 .256
Grade 4										
Unacceptable	1 .500	1 .500	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Acceptable prior	1 .014	0 .000	0 .000	68 .971	0 .000	0 .000	0 .000	1 .014	0 .000	0 .000
Acceptable after	0 .000	0 .000	0 .000	4 1.00	0 .000	0 .000	0 .000	0 .000	0 .000	0 .000
Acceptable in sentence	0	0	0	0	0	0	0	0	0	0
Totally acceptable	1 .004	4 .016	1 .004	11 .044	6 .024	6 .024	11 .044	155 .620	1 .004	54 .216
Grade 6										
Unacceptable	3 .375	1 .125	1 .125	1 .125	0 .000	0 .000	1 .125	0 .000	0 .000	1 .125
Acceptable prior	0 .000	5 .039	2 .015	116 .892	5 .039	0 .000	0 .000	2 .015	0 .000	0 .000
Acceptable after	1 .071	1 .071	0 .000	10 .714	0 .000	0 .000	0 .000	2 .143	0 .000	0 .000
Acceptable in sentence	0 .000	0 .000	0 .000	0 .000	0 .000	1 .333	0 .000	2 .667	0 .000	0 .000
Totally acceptable	5 .017	1 .003	3 .010	14 .048	5 .017	2 .007	2 .007	138 .473	0 .000	122 .418

Syntactic Acceptability, Semantic Acceptability and Correction

At each of the grade levels for re-transformation miscues, there is a strong tendency to correct those which are totally unacceptable structurally (75%, 50%, 57%) and those which are syntactically acceptable with prior structure (67%, 53%, 49%) (see Table 33).

There is a strong tendency not to correct miscues which are acceptable with following structure (77%, 75%, 71%) and an even stronger tendency not to correct those which are totally syntactically acceptable (78%, 80%, 92%).

For semantic acceptability and correction of non-transformation miscues, there is a tendency at each of the three grade levels not to correct those which are totally unacceptable (57%, 61%, 80%) (see Table 34a).

The second and fourth grade readers have a tendency to correct miscues which result in partial semantic acceptability. The sixth graders tend not to orally correct non-transformation miscues with partial semantic acceptability.

At all three of the grade levels, there is a tendency not to correct the non-transformation miscues which have total semantic acceptability (76%, 84%, 83%).

These readers tend not to correct non-transformation miscues which are either semantically totally unacceptable or totally acceptable. By the sixth grade, use of silent correction procedures would seem to influence correction of semantically partially acceptable non-transformation miscues.

The trends for correction of re-transformation miscues at each of the three grade levels are the same (see Table 34b). There is a tendency to correct those that are semantically totally unacceptable or acceptable with prior meaning and a tendency not to correct those that are semantically totally acceptable or acceptable with following meaning.

Re-transformation miscues which are semantically acceptable with following meaning are less disruptive than those which are acceptable with prior meaning. As with syntactic acceptability, there is a tendency not to correct re-transformation miscues that are semantically totally acceptable.

Table 33. --Syntactic Acceptability and Corrections of Re-transformation Miscues for Grades Two, Four and Six

Syntactic Acceptability	Correction		
	No attempt	Correction	Unsuccessful
Grade 2			
Unacceptable	1 .125	6 .750	1 .125
Acceptable prior	25 .294	57 .671	3 .035
Acceptable after	10 .769	3 .231	0 .000
Acceptable in sentence	1 .500	1 .500	0 .000
Totally acceptable	139 .781	37 .208	1 .006
Grade 4			
Unacceptable	1 .500	1 .500	0 .000
Acceptable prior	31 .456	36 .529	1 .015
Acceptable after	3 .750	1 .250	0 .000
Acceptable in sentence	0	0	0
Totally acceptable	200 .800	50 .200	0 .000
Grade 6			
Unacceptable	3 .429	4 .571	0 .000
Acceptable prior	66 .508	64 .492	0 .000
Acceptable after	10 .714	4 .286	0 .000
Acceptable in sentence	3 1.00	0 .000	0 .000
Totally acceptable	269 .921	23 .079	0 .000

Table 34a.--Semantic Acceptability and Corrections of Non-transformation Miscues for Grades Two, Four and Six

Semantic Acceptability	Correction		
	No attempt	Correction	Unsuccessful
Grade 2			
Unacceptable	8 .571	5 .357	0 .000
Acceptable prior	3 .375	5 .625	0 .000
Acceptable after	0	0	0
Acceptable in sentence	3 .300	7 .700	0 .000
Totally acceptable	56 .757	17 .230	1 .014
Grade 4			
Unacceptable	42 .609	11 .159	16 .232
Acceptable prior	2 .400	3 .600	0 .000
Acceptable after	0	0	0
Acceptable in sentence	2 1.00	0 .000	0 .000
Totally acceptable	74 .841	14 .159	0 .000
Grade 6			
Unacceptable	103 .798	18 .140	8 .062
Acceptable prior	12 .571	8 .381	1 .048
Acceptable after	0 .000	1 1.00	0 .000
Acceptable in sentence	13 .867	2 .133	0 .000
Totally acceptable	196 .834	37 .157	1 .004

Table 34b.--Semantic Acceptability and Corrections of Re-transformation Miscues for Grades Two, Four and Six

Semantic Acceptability	Correction		
	No attempt	Correction	Unsuccessful
Grade 2			
Unacceptable	2	7	1
	.200	.700	.100
Acceptable prior	28	61	3
	.304	.663	.033
Acceptable after	10	3	0
	.769	.231	.000
Acceptable in sentence	5	3	0
	.625	.375	.000
Totally acceptable	131	30	1
	.804	.184	.006
Grade 4			
Unacceptable	3	2	0
	.600	.400	.000
Acceptable prior	35	42	1
	.449	.539	.013
Acceptable after	3	1	0
	.750	.250	.000
Acceptable in sentence	4	1	0
	.800	.200	.000
Totally acceptable	190	42	0
	.819	.181	.000
Grade 6			
Unacceptable	3	4	0
	.429	.571	.000
Acceptable prior	69	68	0
	.504	.496	.000
Acceptable after	10	3	0
	.769	.231	.000
Acceptable in sentence	6	0	0
	1.00	.000	.000
Totally acceptable	263	20	0
	.929	.071	.000

Conclusions

Analysis of the correction attempts, semantic acceptability and syntactic acceptability of the miscues of these proficient second, fourth and sixth grade readers leads to the following conclusions.

1. The range and level of corrections made by the sixth graders is smaller and lower than that made by the second and fourth graders. The fourth graders exhibited the widest range of correction and showed an inverse relationship between M.P.H.W. and correction.

2. The sixth grade readers make greater use of silent corrections.

3. At none of the three grades is percentage of correction tied to either miscues per hundred words of text or to comprehension scores.

4. These readers can proficiently read material from which they gain only moderate or minimal comprehension. At each of the three grades, the readers were much more successful interpreting storyline than they were theme.

5. The second and fourth graders make strong but not too successful use of graphic cues in their non-transformation miscues involving peripheral visual field and tend to correct them. The sixth graders make successful use of structure in theirs and tend not to correct.

6. For re-transformation miscues involving peripheral visual field there is an equal occurrence between correction and non-correction at each of the three grades. Corrections are made on the basis of structural acceptability.

7. There is almost no correction of dialect related miscues at any of the three grades. The few corrections made are indicative of the reader's adjustment to the author's dialect.

8. As graphic proximity increases, the tendency not to correct non-transformation miscues increases and becomes stronger through the grades.

9. For re-transformation miscues at the three grades, moderate graphic proximity is associated with a tendency not to correct.

10. The second graders demonstrate a limited use of phonics tending to correct only non-transformation miscues with moderate phonemic proximity. The fourth grade readers tend to correct non-transformation miscues at all levels of phonemic proximity suggesting overuse of phonics.

The sixth graders make moderate use of phonemic cues, tending to correct only those non-transformation miscues with low proximity.

11. There is a tendency through the grades not to correct re-transformation miscues involving moderate or high phonemic proximity. Structural concerns moderate the use of phonics.

12. Through the grades, graphic proximity is much more consistently and successfully used than phonemic proximity.

13. At each of the three grade levels, the subjects demonstrate a very strong control of English structure. There is a tendency which increases through the grades for even their re-transformation miscues to retain the grammatical function of the text.

14. Re-transformations which do involve a change in grammatical function will tend to occur at points of syntactic structure where alternate functions are equally possible.

15. Corrections increase for re-transformation miscues when they occur at pivotal structure points and thus have an increased tendency to be structurally unacceptable.

16. There is no significant relationship between corrections and miscue type or level which cannot be attributed to underlying causes.

17. At each of the three grades, and for both non-transformation and re-transformation miscues, corrections decrease as syntactic and semantic proximity increase.

18. The non-transformation miscues of each of the three grades tend to have total syntactic and semantic acceptability combined with high graphic proximity.

19. For re-transformation miscues there is a trend toward high graphic proximity. This trend is strongest where syntax and/or meaning are unacceptable or partially acceptable.

20. The trend for phonemic proximity of non-transformation miscues moves from low to high as the grade level of the reader increases.

21. The trend for phonemic proximity of re-transformation miscues that are totally semantically and/or syntactically acceptable moves from low for the second and fourth graders to moderate for the sixth graders.

22. At each of the three grades, high syntactic proximity is combined with total syntactic acceptability for both non-transformation and re-transformation miscues. The trend toward high proximity increases through the grades.

23. At each of the three grade levels, there is a tendency to correct re-transformation miscues that are syntactically unacceptable or acceptable with prior and a tendency not to correct those that are syntactically totally acceptable or acceptable with following material.

24. For non-transformation miscues at each of the three grades, there is a tendency not to correct those that are semantically totally unacceptable or totally acceptable.

25. At each of the three grades, there is a tendency to correct re-transformation miscues that are semantically unacceptable or acceptable with prior and to correct those that are syntactically totally acceptable or acceptable with following material.

IV

RE-TRANSFORMATION MISCUES

A re-transformation is involved in any miscue which causes a change in the grammatical structure of the text material. A reader works with the already generated and transformed sentences of an author. He induces the deep structure as he responds to the surface structure that he perceives the author has chosen. At either of these levels, it is possible for him to miscue - to deviate from the author's structure.

The Phenomena

From 39% to 84% of the miscues that these proficient readers make cause some change in the grammatical structure of the material that they have read. Miscues which involve re-transformations have been demonstrated to differ qualitatively from miscues which do not. Re-transformation miscues, as opposed to non-transformation miscues, retain a closer semantic proximity to the text, have more moderate graphic and phonemic proximity to the text and maintain a closer relationship between semantic and syntactic acceptability.

Of all the qualities involved in readers' re-transformations of material, the most significant is that they do restructure. Re-transformations are a direct indication that reading is not an exact word-by-word process, a process of matching letters to sounds, or a simple surface level attack upon the written material of the author.

If a reader has proficient control of his own family's dialect and if he makes use of his own language in the reading process, some of his reading miscues will be caused by the difference between his language and the language of the author. The number, quality and kinds of these miscues should change with such variables as the reader's age, his basic reading proficiency, his competency in handling dialects other than his own and the distance existing between the structures of his language and those of the language used by the author.

Qualitative Differences

We've defined and identified re-transformation miscues in oral reading situations and have offered a theoretical explanation for their occurrence as the deep structure of language plays its role in the reading process. In analyzing re-transformation miscues for qualitative differences, little help is offered by transformational grammarians. Their focus is upon development of a language model and they tend to work with self generated language of controlled complexity. When they have turned to the question of complexity, both from a standpoint of logical and psychological concern, they have most frequently operated with a limited number of structures, i.e. negatives and passives, where they have felt their knowledge to be most extensive.

Menyuk's study (1963) which attempted to devise a transformational grammar adequate to explain the speech of a limited group of very young children still made use of such categories as passive, negative, question, contraction, deletion and imperative.

Examination of the reading behavior of children is to look at the "other side of the coin" from language production. It is to be concerned with how readers are able to cope with the surface structures writers have generated to reconstruct a message. Studies such as Menyuk's have, in fact, helped substantiate that children are operating orally with these language patterns and structures. The data from the present study have indicated that these readers make proficient use of knowledge concerning language structure in their reading strategies. The question now becomes one of discerning qualitative differences within reading re-transformations that will widen our perspective of the reading process and of language use in general. These differences must go beyond delineation of the specific structures involved to concentrate on the relationship of meaning to the deep structure of our language.

Predictability

Table 35 shows the number of sentences that have from one to nine re-transformation miscues within them. These figures indicate that miscues involving grammatical re-transformations tend to cluster around a limited number of sentences from a story.

One of the sentences from the second grade text that generated eight miscues was, After the cut in his allowance, Freddie's chemistry experiments narrowed to those safely outlined in a library book. All six of the readers had difficulty with the cut, tending to replace it with he cut. Two factors come together to increase the possibility of miscueing on this sentence. The sentences in the preceding paragraph had Freddie as the subject with the sentence immediately prior to the miscue starting with Sometimes he thought.... Added to this is the fact that After the cut in his allowance,... is a transformation of the more familiar structure After his allowance was cut,.... The transformation caused the verb phrase was cut to become a noun phrase the cut. All the readers were expecting a noun phrase, as is evidenced by their miscue, but they were not expecting cut to function as a noun. In three instances,

Table 35.--Sentences Involving One or More Re-transformation Miscues

Number of Re-transformations	Number of sentences Involved		
	Grade 2	Grade 4	Grade 6
1	35	50	156
2	33	42	84
3	21	29	31
4	12	12	5
5	5	3	2
6	3	2	-
7	-	-	-
8	3	-	-
9	-	1	-

the reader produced After he cut his allowance,... making cut a verb. In another two instances, readers had to regress following the, in order to retain noun intonation. The final reader produced After the cut was... and then corrected.

In the text read by the fourth graders, the sentence "I'm a very busy man," he said, hanging up the two telephones into which he had been talking. generated six reader miscues, all of which involved optional surface level transformations. In three instances he'd was changed to he had, deleting the contraction transformation. In another three instances the two telephones became two telephones.

A second sentence which generated multiple miscues for the fourth grade readers was "All right," she said after a pause, "Mr. Barnaby will see you if you come over right away." All the difficulty here seems to center around the author's choice of structuring, with you (the central character of the story) being made the direct object of the sentence instead of the subject. Two of the subjects read ...Mr. Barnaby will see if you.... The deletion of you moves will see to an idiomatic phrase which has the meaning of "will make an attempt." Another subject produced ...Mr. Barnaby will you see if she can... and a fourth produced ...Mr. Barnaby will see you if you will.... The structure "All right," she said after a pause, "You can see Mr. Barnaby if you come over right away." would not have generated so many miscues.

One of the sentences in the text read by the sixth graders that cued five re-transformations is:

> As Chip leaped toward the coyote, it
> whirled and ran lightly up the slope,
> staying tantalizingly ahead and leading
> Chip toward the brow of the knoll.

All of the readers' difficulties center on tantalizingly. Four omitted the -ly ending and one omitted the -ing ending. The compounding of derivational and inflectional endings has caused the reader difficulty. Only one other word in the story has the same structural complexity, noiselessly, and it caused three re-transformation miscues.

By examination of just one sentence that has cued multiple re-transformation miscues, it is possible to begin to focus in upon a specific structural and semantic relationship that proves difficult for readers - the compounding of derivational and inflectional endings.

Further use of this procedure should highlight other specific difficulties which cluster around particular structures. This means that certain sentences can be predicted to cause grammatical re-transformations. Such predictability can then be tested by creating sentences meant to cause specific miscues and testing them on readers.

Re-transformation Categories

We have attempted to classify qualitative differences in reading re-transformations on the basis of the aspect of the receptive process where the miscue occurred.

1. A first category involves the reader's inference of a deep structure different from the author's. A sentence in the sixth grade story read As they approached the tent, the thin wail of coyotes reached her ears from upstream, far to the north. A reader's miscue was ...reached their ears.... The reader anticipated a plural possessive pronominal instead of the singular one used by the author. The fact that the subject of the sentence is plural and that the author uses pronouns in place of proper names, helps to cue the reader's re-transformation miscue. Meaning is altered in this re-transformation category.

2. In a second category, the reader actually anticipates the same deep structure as the author, but uses a different set of transformational rules to generate the surface structure in his oral reading. The sentence He went. could be read as He goed. The deep structure of both sentences includes a noun phrase composed of the masculine singular pronoun and a verb phrase composed of the past tense form of the verb go. The deviation between the reader's response and the expected response is cued by the transformational rule which the reader applied. His rule stated that the past tense form of go is formed by adding the ed morpheme to the root word. The difference in the surface structure which emerges from the application of this rule does not signal a difference in the meaning generated.

3. Within a third category, the reader anticipates the same deep structure as the author, but selects an alternate surface structure which is available through the use of optional transformations. A sentence in one of the stories read Peggy plunged over the brow of the knoll into the tangle of slashing coyotes and whirling dog. One reader's miscue was ...and the whirling dog. The noun phrases generated by the author and by the reader have the same deep structure (determiner adjective noun). The author has chosen the optional transformation to generate the surface structure which permits the determiner to be omitted. The reader has chosen the transformation rule which retains the in the surface structure (actually the deletion rule is deleted).

To examine how these three categories of reading re-transformations operate and what information can be generated out of their use, the re-transformations of one of the readers from each of the three grades have been analyzed. The re-transformation miscues of each of these subjects are representative of those made by the other readers from that grade.

Re-transformation Miscues of Three Readers

Subject No. 257 from the second grade made 51 re-transformation miscues. Thirty-one of these fell within the first category, 5 within the second category and 15 within the third.

Subject No. 441 from the fourth grade made 63 re-transformation miscues - 43 within the first category, 4 within the second category, 16 within the third category.

The sixth grade subject No. 634, made 58 re-transformation miscues - 43 within the first category, 4 within the second category, 11 within the third category.

Category One

Miscues falling within this category involve a reader's inference of a deep structure which is different from that of the author's. This means that there is an underlying difference between the meaning which the reader anticipates and that which the author intended.

Second Grade Subject

Eleven of the second grader's re-transformation miscues involved noun phrases. One of these involved the move from singular to plural and was probably partially influenced by a previous plural noun within the sentence. Carefully he taped the batteries end to end on the ruler so that they touched. was read as ...on the rulers....

Another four miscues involved noun determiners. Moves between a and the, as for example a secret for the secret, resulted in three miscues. The fourth involved the sentence After the cut in his allowance... being read After he cut... and was probably influenced by the fact that the preceding sentence in the text read Sometimes he thought that a scientist's life was filled with disappointments. The reader just assumed that the same subject would continue into the second sentence - a possible acceptable English construction.

In another two instances, the reader simply omitted the direct object it. It was omitted from the sentence I want you to save half your allowance for it each week., as well as from Then, winding it and setting it carefully, he returned it to his parent's room. The reader had no particular trouble with the function of direct object, but it would seem that the pronoun as a direct object caused some difficulty.

Still another four miscues involved possessive pronominals within noun phrases. *His mother's bell...* became *...for his mother*, and, *...when his parents...* became *...when he....* The possessive pronominal within a noun phrase does give this reader some difficulty. He anticipates the noun at the points where the possessive arises.

The possessive pronominal was involved in one other more complex miscue. *His sister's cries grew louder.* became *His sister cried...* with a noun (cries) being moved to a verb (cried).

Verbs and verb phrases were involved in another significant number of re-transformations. There was no one particular problem or difficulty that could be identified. Tense was involved when *...he had done...* became *...he did...*; the dialogue carrier was affected when *"Three o'clock!" Freddie said...* was read *"Three o'clock!" Freddie saw....* In another three instances adverbials were either omitted or substituted. In one final instance, both tense and negation were involved when *...you didn't want...* became *...you want.*

Two final verb related miscues involved reader anticipation of a compound verb. *Freddie tried, with all his strength,...* became *Freddie tried, and all...* while *...taped the batteries end to end on the ruler...* became *taped the batteries end to end and....*

A third and final cluster of miscues involved prepositions. Twice the preposition was omitted causing the whole phrase to be removed from the deep structure and the meaning of the sentence to be altered. One of the instances involved the sentence *When Freddie ran up from the cellar, he heard his sister's voice calling, "Freddie! Freddie!"* The reader said *...ran up the cellar....* *Up*, which had been functioning as a verb particle in the text version was made into a preposition and the boy who had come up out of the cellar was made to run across it.

In a second set of miscues, prepositions were substituted causing a change in deep structure of the sentence. One of the sentences read *Freddie taped the bulb in place on the ruler.*, but was read *Freddie taped the bulb in place of the ruler.* In the text version, the bulb was fastened to a spot on the ruler; while in the child's version, the bulb was taped as an alternative to taping the ruler. Structurally, the text version contained two prepositional phrases - *in place* and *on the ruler* - while the reader's version contained only one which was headed by the hyphenated preposition *in-place-of*.

In two instances, the reader demonstrated possible reading difficulties - pronouns functioning as direct objects and the occurrence of adverbials. In general, the reader's re-transformations within this category supported the position taken earlier in Chapter 3 that structural miscues tend to occur at pivotal points in structure where possible alternatives exist.

Fourth Grade Subject

Twenty-four of the fourth grader's category one re-transformation miscues involved noun phrases. There were three which involved slight changes in noun determiners - a prize for the prize, the side for his side. Another couple involved adjective deletions - something for soothing things or insertions - radio station for station. Pronouns were substituted in yet another couple of instances - we'd for he'd, he for we. All of these miscues are minor, do not point to any particular difficulty and are common to the subjects at each of the three grade levels.

A group of five miscues concerned words functioning as direct objects. In all of these instances, a pronoun was involved - took us became took out, will see you became will see if. The difficulty which the second grader experienced with pronouns functioning as direct objects is also experienced by the fourth grader.

In one instance, the reader anticipated a compound noun - Andrew and... for Andrew had.... Again, this kind of re-transformation has some frequency at each of the levels and is more indicative of the fact that this is a highly likely English structure than of any reading difficulty.

There are some miscues uniquely related to the fourth graders and reflective of developmental reading abilities. The sentences involved have structures which are either rare or non-existent in the material read by the younger children.

A small group of miscues was concerned with a move from plural to singular - TV program for TV programs, Thursday for Thursdays. In each of these cases, the plural noun stood for a reoccurring situation, as for example, a TV show which would occur on Thursdays. The reader, in each instance, changed it to a single occurrence suggesting that this noun function is one which he has some conceptual trouble with.

A portion of one sentence stated that, There was a glassed-in part with glassed-in functioning as an adjective of the noun part. The reader produced, There was a glass in part... moving glass to the noun function and in to a preposition. The word a had cued the reader to a noun phrase, but he was not prepared for glass to have either the verb ending or the adjectival function.

In another instance, an intensifier - too loudly - was replaced by an adverb - only loudly. Both are possible acceptable functions within this structure.

A final four miscues reflect more severe difficulty with structure. In all cases, the structure used by the author is complex and moves more toward literary usage. Also involved in a couple of instances are idiomatic phrases - socially agreed upon structures or formulas which do not strictly adhere to the basic structure of the language or to everyday usage. That is - I mean... became This is - I mean..., But he's going on nine. was read Being good on nine., Go ahead and cry! was started Going... and So education it was! became So education I....

Seventeen of the miscues in category one involved verb phrases and another two involved prepositions. All of these miscues have some similarity to those made at the other two levels and are more indicative of the alternate possibilities within English structure or within story meaning than they are of any particular reading difficulty.

Insertions, deletions or substitutions of verb markers and an according change of tense were involved in several miscues. Examples include I don't think... for I think..., If you are... for If you have a contest, ... and ...we can... for ...we get a good....

Again, there were a couple of instances where compound verbs were either inserted or deleted - Two men were signaling to each other, and one... became ...to each other, and made..., ...clearly and distinctly... became ...clearly his....

Once an adverb was deleted - ...at first one... became ...at one... and once one was inserted - It's settled... became It's just settled....

A move between noun and verb functions was made in three instances reflecting the alternate possibilities of the sentence structures involved. I think you may have hit... became I think you may have it... while I ran to the telephone... became I ran to telephone....

Dialogue carriers were involved in three miscues and reflected confusion over the speaker - he said for I said, concerning inversion of subject and verb - he said for said Mr. Barnaby, and over the portion of direct speech - "Said" Mr. Barnaby chuckled. for "Say, da" Mr. Barnaby chuckled.

This reader demonstrated some difficulty with pronouns functioning as direct objects. The possibility of some difficulty in handling adverbs and intensifiers also exists. Nouns standing for reoccurring situations seemed to involve a concept with which the reader was not familiar. As with the second grader, this reader's category one miscues tended to occur at points where alternate acceptable structure possibilities exist.

Sixth Grade Subject

The author of the story read by the sixth grade subjects used a great many dependent adverbial clauses. In seven separate instances the subject was able to detach the clause from one sentence and attach it to another without affecting either meaning or structural acceptability. One section of the text read:

> She turned once more to the tent, halting after a step or two when she saw Chip lying a few feet away. She trotted to him sniffing at his still head, whining close to his ear, pawing his shoulder.

The subject read as follows:

> She turned once more to the tent, halting after a step or two. When she saw Chip lying a few feet away she trotted to him, sniffing at his still head, whining close to his ear, pawing his shoulder.

In this section of material, as in the other related miscues, the shift in the clause has caused a minor shift in meaning. In the author's version, the dog halts because she sees Chip. In the reader's version, the dog halts, sees Chip, then go[illegible] to him. The slight change in relationship between the se[illegible]s of events does not disrupt the story.

This series of miscues occurs because the reader ignores formal written cues such as capitalization and punctuation in determining the dependency of a clause. However, the author has added to the reader's tendency by producing ambiguous structures that have no more clear cut relationship within one main clause than they do with another.

Verbs form the core for a series of related miscues. In five instances, the reader altered verb tense. There are neither enough examples nor enough consistency among those available to be specific about the cause of the miscueing, but one possibility is suggested. Shifts in verb tense within a sentence need to be examined. Examples from the story on which the subject miscued include: ...had just sensed the loss of its mate and felt fear... and ...had expected food, but he sat....

Internal sentence moves between past and past perfect might prove to be difficult for readers to handle. This does not necessarily mean that the readers are not able to cope with these tenses when they are more consistently used. Verb shifts, of course, plague writers as well as readers.

In at least one instance, visual peripheral cueing has to be counted as an added possible variable. The story sentence reads *Chip was hungry and had expected food, but he sat facing the sheep.* The reader produced *...but he had....* The reader may shift tenses because the verbal auxiliary is in his visual field.

Another two miscues center around verb forms functioning as adjectives. The author's phrases *...the startled bleat of a sheep...* and *...the bedded sheep...* are changed to *...startling bleat...* and *...bedding sheep....* In both instances, deep structure is considerably altered. Bleats which indicate startled sheep become bleats which are startling to listeners, and sheep which have already been put down for the night, become sheep which are presently being put down.

The question is not one of whether the reader can handle the adjectival function. This ability had already been demonstrated. What should be investigated is the complexity involved in the use of various derivational functions operating in the adjective position.

Still a third group of verbs involves five instances in which a noun phrase is changed to a verb phrase and one instance in which a verb phrase is changed to a noun phrase.

In three instances, this structural change creates totally acceptable sentences. One sentence is:

> On nights when the fires were burning,
> she often heard coyotes singing a protest
> from distant ridges, while the sheep
> rested safely.

The reader produced:

> On nights when the fires were burning,
> she often heard coyotes singing to
> protest from distant ridges, while
> the sheep rested safely.

The re-transformations involved in the other three sentences are acceptable with the prior structure. Acceptable English sentences could be formed from these segments.

The interchange between noun and verb phrases and the problems caused by verbs in adjective position tally with two earlier findings from this study. First, verbs in re-transformation miscues are replaced in almost equal percentages by other verbs, nouns and adjectives. Second, re-transformation miscues will occur at points in language where alternate structures are possible. Hence, we must assume the readers are predicting possible but incorrect structures.

Pronominals and possessive pronominals form another area of interest. A sentence from the story reads Regaining her position with her back to the ewe, Peggy knew that her quivering muscles would not respond much longer. The reader's version was Regaining their position with their back to the ewe, Peggy knew that her quivering muscles would not respond much longer.

The sentence prior to the miscue sentence was Then both leaped out of range. It seems obvious that the reader received the semantic cue for their from the plural subject of this sentence, the two coyotes.

In another instance, the material reads She looked up at the snarling coyotes on either side, watching as they settled themselves for their next assault. The reader changed the final phrase to for the next assault which is an acceptable alternative structure to the author's (added to this dimension is the fact that the and their are graphemically and phonemically close).

In a final example, the material is He stepped into the tent, only to return in a moment to say, "It's worse than you think, Jake." The subject starts the sentence by saying She stepped.... This miscue is semantically related to prior story action in which the dog did go into the tent. Since the story action at this point has both the men and the dog entering camp, the confusion of the reader is understandable.

The confusion centering around pronominals seems to be of the author's own making. A pronoun in text should have a noun as its direct antecedent. The author has made too frequent and too confused use of pronouns in textual situations that are semantically ambiguous. Again there is evidence that readers' miscues involve a prediction which turns out to be wrong.

Singular and plural nouns involve another group of miscues. In three instances, a plural noun is changed to a singular. In the fifth case, a singular noun is changed to a plural.

Two sentences seem to involve awkward structure on the part of the author which the reader edits. The sentences read:

> It had been a long day for the dogs,
> and Peggy limped heavily as she
> approached the camp.
>
> The words "corrals" and "boss"
> meant things to Peggy, and
> she whined in recognition.

In the first sentence, the subject read *dog* and in the second *corral*. The move to the singular in the first sentence brings the direct object of the first half of the compound structure into agreement with the subject, *Peggy*, of the second half. In the same manner, *corral* is brought into agreement with *boss*.

Two more examples would seem to show some inconsistency on the part of the reader. The clause *when her hind legs backed against the ewe* is changed to *hind leg*. Yet *whining close to his ear* becomes *his ears*.

Perhaps the explanation lies in the fact that both of these are almost idiomatic. Individual readers will have their own preferred choice.

Significance of Miscues in Category One

The miscues occurring in category one can range from inconsequential to quite serious. When the reader misinterprets the deep structure of a passage, the significant questions to ask are:

1. Is the miscue caused by complex structure which the reader is unable to handle?

2. Is the miscue due to the use of ambiguous structure and/or meaning by the author?

3. Is the miscue caused by intricate meaning which the reader is unable to handle?

Category Two

This category, which involves the same deep structure for both author and reader with different transformational rules generating surface structure, is not an extensive one for the three subjects. Surface level differences in idiolect and dialect are the concern here.

Though the readers have retained dialect differences in their speech, they have become highly successful at accommodating to the structure of the author.

Second Grade Subject

Five of this subject's re-transformation miscues involved category two. Three concern the null form of the past tense verb - *...depend on...* for *...depended on...*, *Elizabeth stop crying.* for *Elizabeth stopped crying.* In another, a form of the verb *to be* is omitted - *You just like Uncle Charles.* in place of *You're just like Uncle Charles.* In the final instance, there is confusion over the use of the negative in contracted form with a verb marker - *...I wish you'd didn't want...* for *...I wish you didn't want....*

Fourth Grade Subject

This subject has three miscues involving either dialect or idiolect. There is one omission of the -ed verb ending - I open the dictionary... for I opened the dictionary... and one omission of the -s verb ending - ...everybody like babies. for ...everybody likes babies. The omission of the contracted form of a verb marker is involved in the third miscue - We got... for We've got....

Sixth Grade Subject

Four miscues seem to be possible members of this category. All involve the null form of inflectional morphemes.

The first two are plural nouns, coyote fire for coyote fires and bunch of fur for bunches of fur. A third involves the possessive, on Peggy right for on Peggy's right and the fourth is the past tense, they act for they acted.

Significance of Miscues in Category Two

If these kinds of dialect and idiolect differences have the same deep structure as the text material and if the reader is able to signal his knowledge of this by translating into his own dialect then we may be sure that meaning is being retained through the shift and gained by the reader.

Dialect related miscues cannot be successfully written out of material unless the material is written explicitly for a small, cohesive and well known population. Each reader brings his unique dialect and idiolect to the reading task and complete anticipation of these differences is an impossible task.

Since data from this and related research (Goodman & Burke, 1968; Y. Goodman, 1967) indicate that dialect miscues do not interfere with meaning, the concern over these surface level differences seems wasted. Miscueing in reading does not become serious until it hinders comprehension.

Category Three

Optional transformations mean that at least two surface level structures can be derived from one deep structure. The deep structure and the meaning remain constant.

Second Grade Subject

Sixteen miscues fall within this category for the second grade subject and involve a wide variety of grammatical functions: omission of an adverb - ...to make it look new. for ...to make it look like new., omission of a phrase marker - The next morning... for Then the next morning..., and omission of a clause marker - *Then one afternoon, Mrs. Miller had gone...* in place of *Then one afternoon, when Mrs. Miller had gone....*

Four miscues involved deletion of noun determiners - *...mixing the strange and unknown.* for *...mixing the strange and the unknown.*, *...his teacher was talking angrily to his father.* for *...his teacher was talking angrily to father.*

Another one added a conjunction to a list of objects so that there was *...copper wire and a small bulb, and tape.* instead of *...copper wire, a small bulb, and tape.*

Chemicals functions as the direct object of the sentence, *But I guess I added too many chemicals to the mixture.* and was omitted in the reading. Similarily the verb particle *out* was omitted from the structure *...cleaned out the refrigerator....*

One sentence in the text read *Now I'll go get Mother.* It is an already transformed version of *Now I will go and (I will) get Mother.* The reader moves one step beyond the author when he produces *Now I will get Mother.*

In another instance, the reader is able to delete an entire prepositional phrase without changing meaning when he omits *for him* from the sentence *That night, when Mr. Miller came home, Elizabeth was waiting for him at the front door.*

In a final example, this second grader removes a dependent clause from a complex sentence and forms two independent sentences. *Freddie didn't mind being compared with his Uncle Maximilian, who was a real chemist with a company in Switzerland.* is read as *Freddie didn't mind being compared with his Uncle Maximilian. He was a real chemist with a company in Switzerland.*

Fourth Grade Subject

The fourth grade reader has 16 miscues fall within category three. As with the second grader, a wide variety of grammatical functions is involved.

The conjunction *and* was once inserted and once deleted from sentences without altering deep structure. For example: *He was a pretty good kid; I couldn't help feeling proud.* was read *...and I couldn't....*

Minor surface level changes in noun determiners occurred four times. *Get that baby over here!* is read *Get the baby over here!* and all the prior portions of the story support the concept that it is one particular baby that is referred to.

A clause marker is removed when *...I saw that my Mother was smiling broadly.* is read *...I saw my Mother was smiling broadly.* An adverb goes when *off* is omitted from *A week from Saturday seemed a long way off.*

An adjective is inserted when *crib* becomes *baby crib*, and is substituted when *televised program* becomes *television program*.

One sentence in the text is *I mean I really yelled it.* which is a shortened version of something like *What I mean is that I really yelled it.* The reader reduced this structure even more than the author and produced *I mean, really yelled it.*

A preposition was inserted at the surface level when *...he's home a lot...* became *...he's at home a lot...* and deleted when *...a week from Saturday at 10:30...* became *...a week from Saturday, 10:30...*.

This reader, as did the second grader, very successfully produces alternate surface level structures of the author's original intended deep structure. He sometimes deletes transformations used by the author, sometimes inserts ones the author failed to make use of. These choices on the part of the reader reflect personal preference and comfort with particular surface level structures.

Sixth Grade Subject

One series of category three miscues which this subject makes revolves around the insertion or omission of conjunctions and clause markers. The conjunction *and* is involved in the two following sentences.

> He had a vicious tear at his throat, the tendon above one hind leg was severed, and his life spark was flickering.

The reader inserts *and* to read *...and the tendon...*.

> The alarm of the ewes, frantic for their lambs, was contagious. The band overflowed the bedding ground and started up the hillsides.

Again the reader inserts *and* to read *...was contagious and the band overflowed...* forming a compound structure. Since the reader inserts conjunctions into the writing of others, it would not be surprising to find that he is still in the developmental stage in his own writing where he makes extensive use of compounded and run-on sentences.

The sentence involving a clause marker is:

> She stood on her hind feet and fought fang
> to fang with one of them who tore
> chunks of fur and hide from her neck,
> while the other slashed a hind foot.

The subject reads ...from her neck. The other....

The insertion and deletion of conjunctions and clause markers form one of the largest groups of miscues made by the total subjects. Reflected here are individual style choices and developmental language stages of the readers.

A second, and equally large group of miscues concerns the insertion and deletion of the from noun phrases. The phrase for the shale of the hillside becomes for shale of the hillside and with warmth from the sun becomes with the warmth from the sun.

This subject makes a relatively small number of retransformation miscues that are disruptive of structure and/or meaning and when he does he has a strong tendency to correct. Though he is not totally comfortable with all of the structures used by the author, his ability to correct demonstrates his growing facility in handling them.

Some of the miscues, such as those involving pronouns, adverbial clauses, and determiners, point to ambiguous or confusing structure usage on the part of the author.

Significance of Miscues in Category Three

None of the subjects seem to be consistent about either deleting or inserting the determiner. A profitable approach might be to analyze the structure of the surrounding material to determine the consistency of the author.

Another aspect of optional deletion transformations that needs to be considered is the fact that these readers have a competence level which apparently out-strips their performance level. They control the concept of optional transformations, but their performance can be erratic depending on how well developed their skill is and upon the particular transformation involved.

A story sentence reads She realized that she was alone and that the safety of the band depended upon her. The reader produces She realized that she was alone and that the safety of the band of.... At this point, the subject corrects, but it seems likely that he intended to say ...the safety of the band of sheep depended on her. He feels comfortable including the full but unnecessary descriptive phrase, yet he is aware that an optional choice exists.

Miscues in this category are seldom disruptive of text or meaning. It may be that their numbers will increase or decrease with differences in the developmental level of the reader, the consistency of the author and the idiomatic preferences of the author and the reader.

Conclusions

This rather brief and simple analysis of three subjects' re-transformation miscues does substantiate the usefulness of the suggested categories. The relationship between changes in deep and surface structure and meaning is an important key to the analysis of the interaction between reader and author.

Delineation of the available structures of our language and their relative frequency of occurrence has played an important function in the initial development of a generative transformational model of our language. To begin to apply this knowledge in an investigation of the reading process, qualitative differences in the functioning of basic structures need to be explained.

These differences center upon the relationship between meaning and structure. In some instances, the re-transformation miscue is the result of semantic confusion. One of the only miscues in the study involving a negative is caused by the reader's confusion over how a flock of sheep is protected from coyotes. The story explains how fires were lit *...on high points, where they could be seen for miles.* This information conflicts with what children logically know about being safe from predatory creatures, such as big dogs or older bullies, which is to avoid them. So the sentence is read *...where they could not be seen....* The grammatical restructuring is not connected with an inability to handle the negative structure, but with difficulty in handling the concept.

A second aspect of the close interrelationship between structure and meaning which needs to be examined further involves the relative conceptual difficulty incurred when derivational word forms fill particular grammatical functions. Such structures as *rocky ledge*, *a gathering pool*, *televised program* and *the shadowy figure* seem to cause difficulty for these readers. Their expectations are for *rock* and *shadow* to function as nouns and for *gathering* and *televised* to be found in a verb position.

Still a third dimension which needs examination is the relative difficulty experienced by a young reader with the structurally simple paraphrases of structurally complex idiomatic phrases. Familiar phrases like *heck of a time*, *What do you make of this?*, *that's all*, *besides* and *I guess* that have a culturally based meaning, should cause less difficulty than structurally more simple but unfamiliar material. The aspect of reading related to thought processing functions as an important variable determining level of difficulty.

While familiar idiomatic phrases can be comfortably handled by the reader, literary phrases which are also meant to impart a meaning greater than that attributed to their individual words can prove to be difficult. Examples include *numbed brain*, *the bold face of Antelope Rim*, *a gathering pool of darkness*, *a sickly whisper* and *end-to-end*.

A closely related literary device which also gives trouble is the use of inference. In the sixth grade text, the excessive coughing of the herder must be linked by the reader to his death. The fact that no cooking fire is built must be used to infer that there is no food for the dogs. That coyotes fear fire must be deduced from the knowledge that fires are built to protect the sheep.

Difficulty in handling the concept load and intuitive leaps necessary for use of these literary devices lead to situations where proficient young readers are able to read material with a minimum of difficulty and gain superficial meaning but fail to grasp the significant underlying relationships of a story.

The background of the reader, his reading proficiency, the semantic and structural complexity of the material all function as interrelated variables in the reading process.

V

FINDINGS AND IMPLICATIONS

This study has examined the oral reading of eighteen proficient readers, six each from grades two, four and six. Reading miscues have been divided into those which do not alter syntactic structure (non-transformation miscues) and those which do (re-transformation miscues). These two groups of miscues have then been examined against categories of The Goodman Taxonomy of Reading Miscues with concern for correction attempts, cueing from the peripheral visual field, dialect, graphic and phonemic relationships, grammatical function, levels of syntactic involvement, syntactic and semantic proximity and syntactic and semantic acceptability. Re-transformation miscues were placed in three categories according to the relationship of the deep and surface structures of the author to those of the reader.

General Findings

The number of miscues per hundred words of text made by the children in the study moderated as grade level increased and the number of re-transformation miscues per hundred words dropped. As age increased, these proficient readers gained control of a wider range of surface level structures.

The ranges of comprehension registered by the readers at the three grade levels were very similar. There was no trend toward increased comprehension in relationship to increased age. Nor was there any direct relationship between comprehension rating and miscues per hundred words of text. At each of the three grade levels, these proficient readers were able to gain at least the minimal level of comprehension that enabled the reading process to function adequately.

Cueing from the peripheral visual field was involved in a moderate number of miscues at each of the three grade levels. The involvement of peripheral visual cues actually increased slightly in relationship to re-transformation miscues. At the same time, the quality of the cueing changed from being graphically oriented to being structurally oriented as the grade level of the reader increased.

A very small percentage of the miscues involved dialect, even though most of the subjects retained deviant dialect in their speech. As the readers increased in age, there was a slight increase in dialect involvement at the phoneme and word level and a decrease at the structural level. These children demonstrated an increasing ability to accommodate to the grammatical structures of the author. The increasing focus of their concern upon larger language structures reduced their consciousness of phonemes and words and allowed greater unconscious use of their dialect at these grammatical levels.

The graphic and phonemic proximity of miscues increased through the grades and was more moderate for re-transformation miscues than for non-transformation miscues. An increased concern for structure moderated the use of graphic and phonemic relationships. At the same time, graphic proximity was always higher and more consistent than phonemic proximity, suggesting the proficiency and usefulness of graphic cues over phonemic cues in the reading process.

At each of the three grade levels, there was a strong tendency to retain the grammatical function of the text in the miscue as was demonstrated by the large number of non-transformation miscues. Even within the re-transformation miscues, the tendency, which strengthened as grade level increased, was to retain grammatical function, with the structural changes involving tense, number or shifts in function words. Adjectives, adverbs and function words were the grammatical functions most frequently involved in re-transformation miscues - adjectives being replaced by nouns and function words, adverbs being replaced by verbs, adjectives and function words. Adjectives, adverbs and some function words (determiners, verb markers and particles) are often optional within phrase structure, while other function words (clause and phrase markers) come at pivotal points in English structure at which alternate routes are possible.

The word functions as the central unit of written communication (as the morpheme functions for speech), and as such is the grammatical level most frequently involved in miscueing. The involvement of grammatical units larger than the word increased in re-transformation miscues as opposed to total miscues. The miscues of these proficient readers invariably involved multiple grammatical levels.

By the second grade, 95% of these readers' non-transformation miscues had high syntactic proximity to the text. There was a similar but weaker trend toward high syntactic proximity for re-transformation miscues which increased as grade level increased. Semantic proximity for non-transformation miscues moved toward high proximity as the grade level increased but was always weaker than syntactic proximity. Semantic proximity for re-transformation miscues moved toward high proximity as grade level increased and was always higher than syntactic proximity.

By the second grade, 95% of the non-transformation and 62% of the re-transformation miscues were totally syntactically acceptable. Virtually all of the miscues made had at least partial acceptability. There was a similar but weaker tendency toward semantic acceptability which increased with age and was stronger for re-transformation miscues than for non-transformation miscues.

Analysis of the reading of these eighteen subjects has indicated a developing facility with the language process. Proficient readers, by the second grade, have developed an extremely strong control of English structure. At the same time, they have developed a concern for seeking retaining and interpreting the author's intended meaning. The development of these two general or overriding aspects of the reading process causes readers to move away from high reliance on close graphic and/or phonemic proximity.

Re-transformations

One of the central purposes of this study has been to examine the usefulness of transformational grammar in analysis of the reading process. To this purpose a set of three categories was devised to deal with the relationship of the deep and surface structures created by the author to those anticipated by the reader.

1. The reader infers a deep structure different from that created by the author.
2. The reader infers the same deep structure as the author but makes use of a different set of transformations to produce the surface structure.
3. The reader infers the same deep structure as the author but makes use of available alternate transformations to produce the surface structure.

This set of categories is general and broad since it represents only a first experimental attempt in the application of transformational grammar to the analysis of reading miscues. However, it is based upon one of the basic tenets of a generative-transformational grammar - that there is a thought related, meaning assigning aspect of speech (deep structure) upon which the culturally and custom related actual speech patterns (surface structure) are based, and that these two aspects of language are joined by application of a series of structural rules (transformations). As such, the categories already created are not so much a first crude form in anticipation of more sophisticated analysis as they are the broad base upon which more refined analyses will be built.

This analysis has made it possible for us to identify points at which miscues are likely to occur. As was pointed out in Chapter IV, certain sentence structures seem to generate multiple reader miscues which we can begin to anticipate. For example:

1. Pronouns functioning as the direct object in a sentence ("If it bothers you to think of it as baby-sitting," my father said, "then don't think of it as baby-sitting.") caused consistent difficulty for both the second and fourth graders.

2. Sentences which were started with a dependent clause or phrase (As Peggy lay watching, the shadowy form of Chip appeared between the grey blur of the sheep and the knolls to the east.) proved difficult for the readers at all three grade levels.

3. The compounding of derivational and inflectional endings within one word (tantalizingly) proved difficult.

4. The use of words ending in -ing in an adjectival position (the running dog) was related to miscue occurrence.

5. Compound nouns or verbs proved difficult where the number or tense was not the same for both words (...the words "corrals" and "boss"...).

6. Idiomatic and literary phrases were other structures which were regularly associated with miscues for the readers in this study with some predictability.

The predictability of these miscues leads to the next possible refinement in analysis. The general taxonomy, as it now exists, has categories for the grammatical functions. As such, it is possible to determine whether the miscue or the text was functioning as a noun, verb, adjective, adverb or function word. Both this research and an older study (Goodman & Burke, 1968) have established that no one particular grammatical function is unduly difficult for proficient readers. However, examination of re-transformation miscues in this study has suggested consideration of three other significant elements - the derivational or inflectional aspects of a word within a grammatical function (the jumping cat) and the syntactic function which the word is performing (sheep as a direct object in Chip saw the sheep...) and the structural organization of the sentence.

This suggests the addition of two new categories to the taxonomy and the refinement of another.

A category on phrase structure would involve the following:

- clause structure
  - main clause left branching
  - main clause right branching
  - dependent clause left branching
  - dependent clause right branching
  - compound
  - embedded

The grammatical function categories would be expanded to include the syntactic function being fulfilled by the text material and by the reader's miscue.

- Phrases
  - Noun Phrase
    - subject
      - noun
        - simple
        - compound
      - pronoun
        - simple
        - compound
      - adjective
      - determiner
        - possessive pronominal
      - intensifier
      - conjunction
    - direct object
      - noun
        - simple
        - compound
      - pronoun
        - simple
        - compound
      - adjective
      - determiner
        - possessive pronominal
      - intensifier
      - conjunction
    - in prepositional phrase
      - noun
        - simple
        - compound
      - pronoun
        - simple
        - compound
      - adjective
      - determiner
        - possessive pronominal
      - intensifier
      - conjunction
      - prepositional phrase marker

  - Verb Phrase
    - predicate
      - head verb
      - infinitive
      - marker
      - particle
    - adverb
      - prior to noun phrase
      - prior to verb phrase
      - within verb phrase
      - following verb phrase

- intensifier
- other
  - question marker
  - conjunction
  - explicative
  - negative
  - indeterminate

Then the category of bound and combined morphemes, which is already in the taxonomy, would be examined in conjunction with the other three categories to provide a more complete view of the inter-relationships between grammatical function, structure and organization.

These changes are, of course, tentative and future study would develop preciseness of use and placement within the original categories.

There is already the obvious need for other categories that deal with structural relationships between sentences, density of concepts, and ambiguity. Though we have not devised a way of handling them at this point, they should be concerns for further research and study.

The increased predictability offered by the use of transformational grammar concepts suggests a new approach to concerns for readability and text complexity.

Meaning, because it is an integral part of deep structure, is always a significant aspect of the analysis. Category one re-transformation miscues have the greatest potential for reflecting serious difficulty since they indicate a discrepency between author's meaning and reader meaning. Text book writers and teachers need to give serious consideration to category one re-transformation miscues when they are examining text ambiguity, concept load, the reader's level of comprehension.

Category two miscues measure the distance between the surface level structure of the author and that of the reader. They indicate any discrepency in the reader's ability to perform with the dialect used by the author. These miscues can be categorized according to whether they involve verb endings, noun endings, derivational endings and verb markers as a measure of the structural differences of the two dialects.

Category three re-transformation miscues reflect differences between surface level structures selected by the author and alternate preferred structures (through usage) of the reader. These differences need to be examined by text book authors and teachers to determine those that reflect individual preferences and instances in which the reader actually edits awkward, ambiguous or redundant structures used by the author.

Text book authors can organize the structures of their materials and teachers can organize pupil instructional needs through the examination of re-transformation miscues. This does not mean that miscue sources should be eliminated but that they should be carefully considered. Since reading is a perceptual process which involves scanning, sampling, selecting and testing, some miscueing is natural. The suggestion intended here is that miscues have different relative significance and value. Analysis and categorization allows both authors and teachers to focus on elements which are disruptive of comprehension and indicate processing problems. Surface level preferences of such items as the English Going to hospital. as opposed to the American Going to the hospital. are insignificant and don't hinder comprehension. On the other hand, a reader's unfamilarity with the phrase end-to-end can cause a tremendous loss of meaning within a text.

Even having separated the major from the minor elements, decisions have to be made concerning whether such elements should be removed from the text or whether they should remain and become the focus for formal or informal learning.

It was a major function of this research to attempt to discern qualitative differences within re-transformation miscues with the hope that such differences would afford a wider perspective of the reading process and of language usage. Miscue predictability offers that perspective and substantiates the usefulness of transformational analysis.

The Reading Process

In this study, we've examined reading miscues with particular attention to the phenomena we have labeled re-transformations. A broader goal has been to test the reality of the theoretical view of reading we have developed. The interplay between graphic, phonemic, syntactic and semantic cues is clearly indicated in the variety of miscues these subjects produced. These readers, and indeed all readers, are not engaged in matching letters and sounds or naming words. They were involved in the complex psycholinguistic process which is reading.

APPENDIX A

THE GOODMAN TAXONOMY OF READING MISCUES

AN ANALYSIS OF MISCUES

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February 1969

1 Words in Miscue

An actual count is made of the words, within the phrase structure, which are involved in the miscue. A count is made on the E.R. (expected response) or O.R. (observed response) and the response which involves the largest word count is used.

When the substitution, insertion or omission of one word causes a change in function for an adjacent word, both words are to be included in the miscue count.

When a series of attempts are made to attack a word, the last attempt is recorded as the miscue. This holds true regardless of the number, kind or complexity of the regression involved.

If a miscue on a word caused additional complexities, then an additional miscue is coded separately.

Example:

```
How               ?
Now Skippy was gone/        code 2 miscues
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2 Correction CRECT

This category refers to immediate attempts to correct miscues.

0 No attempt at correction is made.
1 Yes, the miscue is corrected.
2 An original correct response is abandoned in favor of an incorrect one.
9 An unsuccessful attempt is made at correcting the miscue.

3 Repeated Miscues REPET

This category refers to miscues which are repeated throughout the text. The miscue is coded only the first time it occurs, but the number of repetitions is counted.

+ Inappropriate, multiple miscues could not occur on the word.

- The word does not appear again in the text, but it is assumed that the child is having difficulty with it.

1-8 The number indicates the actual number of miscue repetitions which occur throughout the text. This number will always total one less than the actual number of miscue occurrences.

9 The number indicates that the number of miscue repetitions which occur is greater than eight.

4 Word-Phrase Identification IDENT

This category is closely tied to #3 - Repeated Miscues. When #3 has been marked either + (inappropriate) or - (does not occur in text again), #4 will be marked + (inappropriate). When #3 has been marked 1-9, then one of the following codes will be used:

0 The word is never identified.

1 The word was correctly identified in an earlier instance of occurrence.

2-8 The number indicates the actual instance of correction.

9 Inconsistent, the word is correctly identified in some instances and miscued on in others.

5 Observed Response in Periphery FIELD

This category applies to bound morphemes, free morphemes, words and two or three word sequences. The concern is for whether the O.R. can be found in the visual periphery of the text.

+ This category does not apply. It is not possible for the O.R. to be in the periphery. For example; if the O.R. is a non-word or if the miscue is an omission.

0 No, the O.R. is not in the periphery.

1 The O.R. can be found on the same line or one line above or below the miscue.

2 The O.R. can be found on the second line above or below the miscue.

9 The O.R. can be found in the near area, but there is some doubt about it being within the visual periphery due to such things as intervening space or the use of double columns of print.

6 Habitual Association ASSØC

The concern is for whether any habitual association exists between two words which might be involved in the miscue.

There must be a minimum of two occurrences within the text for a miscue to be coded as an habitual association.

0 No, an habitual association is not involved in the miscue.

1 There is a substitution association between the E.R. and the O.R.
  E.R. The man put the water in a pail.
  O.R. The man put the water in a bucket.

2 There is a sequential association between the E.R. and the O.R.
  E.R. It was a happy occasion.
  O.R. It was a happy birthday.

9 There is some doubt about whether an habitual association exists between the E.R. and O.R. It is possible to use this coding when the E.R. does not occur twice within the text, but when there is a strong feeling that habitual association is involved.

7 Dialect DILCT

Unless particular attention to dialect differences is called for, morphophonemic dialect differences which are widely distributed across dialect groups are not keyed. For example, sof for soft, fella for fellow will not be keyed, while punkin for pumpkin, pitcher for picture, feller for fellow will be keyed.*

0 Dialect is not involved in the miscue.
1 Dialect is involved in the miscue.
2 Idiolect is involved in the miscue.
9 There is a lack of conclusive information to make a definite decision.

8 Graphic GRAPH

This category measures the graphic similarity between the E.R. and the O.R. with the numbers zero through nine representing a scale of increasing similarity. Make use of the graphic information only.

0 There is no graphic similarity between the E.R. and O.R.

1 There is graphic similarity between single key elements or between the middle portions of the E.R. and O.R.
  E.R. Sally O.R. sit E.R. zoom O.R. cook

2 There is graphic similarity between the final portions of the E.R. and O.R.
  E.R. helped O.R. moved

3 There is a graphic similarity between the beginning

---

*Since we use no phonemic system in processing the data, we approximate the sound of what the reader said using a real word if one is available.

portions of the E.R. and O.R.
E.R. perceive O.R. perhaps

4 There is a graphic similarity between the beginning and middle portions of the E.R. and O.R.
E.R. went O.R. wanted

5 There is a graphic similarity between the beginning and end portions of the E.R. and O.R.
E.R. pets O.R. puppies

6 There is a graphic similarity between the beginning, middle and end portions of the E.R. and O.R.
E.R. quickly O.R. quietly

7 There is very similar spelling between the E.R. and O.R., or the E.R. and O.R. are identical except for punctuation.
E.R. saw O.R. was
E.R. ...that grew under water, snails, and a...
O.R. ...that grew under water snails, and a...

8 There is a single grapheme difference between the E.R. and O.R.
E.R. batter O.R. butter

9 The E.R. and the O.R. are homographs.
E.R. read (present tense)
O.R. read (past tense)

For numbers 0 through 6, one extra point is added when the E.R. and O.R. have similar configuration.
E.R. tab O.R. tip 3 + 1 for configuration

One point for configuration is given for the short, two letter, words which might have no other points of graphic similarity.
E.R. to O.R. in

When the O.R. is a non-word, a spelling is created for it by using the spelling of the E.R. as a base.
E.R. scabbard O.R. scappard

9 Phonemic PH0NM

This category measures the phonemic similarity between the E.R. and O.R. with the numbers zero through nine representing a scale of increasing similarity. Make use of phonemic information only.

0 There is no phonemic similarity between the E.R. and O.R.

1 There are some common sounds between the E.R. and O.R.
E.R. saw O.R. was

2 There is a single key element in common between the E.R. and O.R.
E.R. kite O.R. cap

3 There are some key sounds in common between the E.R. and O.R.
E.R. pets O.R. puppies

4 The E.R. and O.R. are similar sounding.

E.R. quietly O.R. quickly

5 The E.R. and O.R. differ in two non-consecutive ways.
E.R. unusual O.R. usually

6 The E.R. and O.R. differ in a two phoneme sequence.
E.R. Miss O.R. Mrs.

7 The E.R. and O.R. differ in a single vowel or consonant.
E.R. tanks O.R. tranks
E.R. grow O.R. grew

8 The phonemic difference between the E.R. and O.R. involves a morphophonemic shift (including schwa);
E.R. went O.R. wint
E.R. Jungle River O.R. jungle river
or a stress cued shift.
E.R. ...that grew under water, snails, and a...
O.R. ...that grew under water snails, and a...

9 The E.R. and the O.R. are homophones.
E.R. too O.R. two

10 & 12 Grammatical Function of O.R. GF0BR
Grammatical Function of E.R. GFEXR

The O.R. and/or E.R. of all word level miscues is coded according to the grammatical function which it is performing:
1 Noun
2 Verb
3 Adjective
4 Adverb
*5 Function word
6 Indeterminate, it is impossible to determine the grammatical function of the O.R. and/or E.R. through use of syntax or intonation.

Non-words can be categorized according to grammatical function where inflectional endings, syntactic patterns, or intonation so indicate.

E.R. The scabbard was... O.R. The scapple was...

Where phrase level miscues occur within phrase structure boundaries, they are coded according to the grammatical function which they perform.

E.R. The little boy ran away. Code as a noun
O.R. A child ran away. function.

11 Function Word O.R. FUN0R

This category is marked if #10 - Grammatical Function

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*When either category #10 or #12 are coded 5 - function word, then both categories #11 and #13 must be marked.

of O.R. was coded 5 - function word.

0 Non-function word, coded only if #10 is coded 1, 2, 3, 4 or 6, while #12 is coded 5.
+ The O.R. is an exclamation such as oh or well, the omission of which will not alter the structure or meaning of the sentence.
1 A noun marker.
2 A verb marker.
3 A verb particle.
4 A question marker.
5 A clause marker.
6 A phrase marker.
7 An intensifier.
8 A conjunction.
9 A negative.

13 Function Word E.R. FUNER

This category is marked if #12 - Grammatical Function of E.R. was coded 5 - function word.

0 Non-function word, coded only if #12 is coded 1, 2, 3, 4 or 6, while #10 is coded 5.
+ The E.R. is an exclamation, the omission of which will not alter the structure or meaning of the sentence.
1 A noun marker.
2 A verb marker.
3 A verb particle.
4 A question marker.
5 A clause marker.
6 A phrase marker.
7 An intensifier.
8 A conjunction.
9 A negative.

14 Submorphemic Level SUBMR

This category involves sound differences between the E.R. and O.R. These differences are limited to one and two phoneme sequences and bound morphemes that are composed of a schwa plus a consonant.

0 The submorphemic level is not involved.
1 There is a substitution of phonemes.
    E.R. bit O.R. bat
2 There is an insertion of a phoneme(s).
    E.R. tanks O.R. tranks
3 There is an omission of a phoneme(s).
    E.R. tracks O.R. tacks
4 There is a reversal of phonemes.
    E.R. saw O.R. was

15 Bound Morpheme BNDMR

Miscues involving all inflectional, derivational and combined form morphemes are included here.

0 A bound morpheme is not involved in the miscue.

1 There is a substitution at the bound morpheme level.
E.R. the televised program
O.R. the television program
All insertions or omissions of -ed and -s (plural) inflectional endings are included as substitutions since the null ending is an acceptable alternative form in some dialects.
E.R. He helped the boy.
O.R. He help the boy.

2 There is an insertion of a bound morpheme.
E.R. the usual program
O.R. the unusual program

3 There is an omission of a bound morpheme.
E.R. His course was predetermined.
O.R. His course was determined.

4 There is a reversal at the bound morpheme level.
E.R. ...small worker...
O.R. ...smaller work...

16 Free Morpheme FREMØ

This is a phonological category.

0 A free morpheme is not involved in the miscue, or the free morpheme within a word is not altered.
E.R. looked O.R. look

1 A substitution is involved at the free morpheme level.
E.R. He looked. O.R. He jumped.

2 An insertion is involved at the free morpheme level.
E.R. The boy ran. O.R. The young boy ran.

3 An omission is involved at the free morpheme level.
E.R. The chicken pecked rapidly.
O.R. The chicken pecked.

4 A reversal is involved at the free morpheme level.
E.R. The boy ran happily.
O.R. Happily ran the boy.

17 Word WØRDL

This is a graphically identified category.

0 A word is not involved in the miscue.

1 A substitution is involved at the word level.
E.R. The train was...
O.R. The toy was...

2 An insertion is involved at the word level.
E.R. The baby cried.
O.R. The little baby cried.
3 An omission is involved at the word level.
E.R. The owner of the shop explained that the fish...
O.R. The owner of the shop explained the fish...
4 A reversal is involved at the word level.
E.R. The crying child was...
O.R. The child crying was...
5 A non-word is substituted in place of a word.
E.R. Inside there was usually a parrot, or a monkey.
O.R. Inside there was usually a partroot, or a monkey.

18 Phrase PHRSL

This category is marked when the miscue causes a syntactic change at the phrase level.

0 A phrase is not involved in the miscue.
1 A substitution is involved at the phrase level. This can involve a change in phrase structure or the substitution of one phrase structure for another.
E.R. The yellow dog...
O.R. the dog...
E.R. ...started toward the rimrock.
O.R. ...started to work the rimrock.
2 An insertion is involved at the phrase level.
E.R. She was little more than...
O.R. She was little, more than...
3 An omission is involved at the phrase level.
E.R. ...that grew under water, snails, and...
O.R. ...that grew under water snails, and...
4 A reversal is involved at the phrase level.
E.R. ...pick the sticks up...
O.R. ...pick up the sticks...

19 Clause CLAUS

This category is marked when the miscue causes a syntactic change at the clause level. It is defined by a transformational interpretation of a clause - a sentence in deep structure.

0 A clause is not involved in the miscue.
1 A substitution is involved at the clause level.
E.R. The book which you gave me was exciting.
O.R. The book you gave me was exciting.
2 An insertion is involved at the clause level.
E.R. The flowers were for the party.
O.R. The yellow flowers were for the party.

3 An omission is involved at the clause level.
E.R. The book which you gave me was exciting.
O.R. The was was exciting.

4 A reversal is involved at the clause level. This must involve a clause of more than one word. It is a resequencing or reorganizing of existing elements. A reversal can involve the movement of a clause marker causing a change in dependency.
E.R. When I arrived he was there.
O.R. I arrived when he was there.

The movement of dialogue carriers from the end of one sentence to the beginning of another is reversal.
E.R. ...," mother said. No...
O.R. ...Mother said, "No...

20 Sentence SNTNL

This category is marked when the miscue causes a syntactic change on the sentence level. It is graphically defined by an initial capital letter and a terminal punctuation mark.

0 A sentence is not involved in the miscue.

1 A substitution is involved at the sentence level. This can mean a change in terminal punctuation or a total word change.
E.R. Now Skippy was gone.
O.R. How Skippy was gone?

Reading through the terminal punctuation of a sentence is coded as the substitution of one sentence for two. The substitution of a conjunction for terminal punctuation (or the reverse) is also treated here.
E.R. ...bands of wild geese had flown over. Joel's father...
O.R. ...bands of wild geese had flown over Joel's father...
E.R. Tom helped father. Then he went...
O.R. Tom helped father and then he went...

2 An insertion is involved at the sentence level.*

3 An omission is involved at the sentence level.
E.R. Tom helped father. Next he helped mother. Then he went to the store.
O.R. Tom helped father. Then he went to the store.

4 A reversal is involved at the sentence level.
E.R. Tom helped father. Then he helped mother.
O.R. Tom helped mother. Then he helped father.

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*For obvious reasons, examples cannot be produced for all instances.

21 Allologs ALL0G

This category is concerned with whether the O.R. involves an alternate word form of the E.R.

0 No, an allolog was not involved in the miscue.
1 The O.R. is a contracted form of the E.R.
   E.R. can not O.R. can't
2 The O.R. is a full form of the E.R. contraction.
   E.R. won't O.R. will not
3 The O.R. is a contraction which is not represented in print.
   E.R. He will not go.
   O.R. He willn't go.
4 The O.R. is either a long or short form of the E.R.
   E.R. the airplane O.R. the plane
5 The O.R. is a variant form.
   E.R. picture O.R. pitcher
6 The O.R. involves a syllable deletion or insertion.
   E.R. television O.R. telvision
   E.R. indicated O.R. indedicated
7 The O.R. involves a shift to idiomatic form.
   E.R. The sheep were spreading over the sides.
   O.R. The sheep were spreading all over the sides.
8 The O.R. involves a shift from idiomatic form.
   E.R. The boss took in the camp at a glance.
   O.R. The boss took the camp at a glance.
9 The O.R. involves a reproduction difficulty.
   E.R. The aluminum pan...
   O.R. The alunimun pan...

22 Bound and Combined Morphemes M0RPH

This category is directly tied to #15 - Bound Morphemes and must be marked if #15 was marked.

0 No, a bound or combined morpheme is not involved in the miscue.
1 An inflectional suffix is involved in the miscue - through substitution, insertion or omission.
2 A non-inflected word form is involved in the miscue. Non-inflected forms involve those words that indicate inflectional changes through changes in base form.
   E.R. The man was busy.
   O.R. The men...
3 An allomorph is involved in the miscue. An allomorph is a consistent alternative form which is not part of a larger morphophonemic dialect variation.
   E.R. pumpkin O.R. punkin
4 A contractional suffix is involved in the miscue - through substitution, omission or insertion.
5 A derivational suffix is involved in the miscue -

through substitution, insertion or omission.

6 A prefix is involved in the miscue - through substitution, insertion or omission.

7 A part of a compound is involved in the miscue - through substitution, insertion or omission.

8 A shift in suffix types is involved in the miscue.
   E.R. televised program
   O.R. television program

9 An irregular or bound base form is involved in the miscue.
   E.R. drowned O.R. drownded

23 Syntax SYNTX

This category measures the similarity between the syntactic structure of the E.R. and the O.R. The numerals zero through nine represent a scale of increasing similarity.

0 The syntax of the O.R. and the E.R. are unrelated.
   E.R. "Oh, good,"...
   O.R. Who...

1 The syntax of the O.R. and the E.R. has little in common.
   E.R. A policeman stared at them.
   O.R. I...

2 The syntax of the O.R. has a key element which retains the syntactic function of the E.R.
   E.R. ...had flown over. Joel's father...
   O.R. ...had flown over Joel's father...

3 There is a major change in the syntax of the O.R.
   E.R. - and yet he, too, would...
   O.R. - and yet he knew...

4 There is a minor change in the syntax of the O.R.
   E.R. Inside there was usually...
   O.R. Inside there were unusual...

5 There is a change in phrase structure of the O.R., which is accompanied by an intonation change.
   E.R. ...that grew under water, snails, and...
   O.R. ...that grew under water snails, and...

6 There is a syntactic change occurring within the phrase structure of the O.R.
   E.R. ...most of them came from jungle rivers where...
   O.R. ...most of them came from Jungle River where...

7 There is a change in person, tense, or number of the O.R.
   E.R. How he wanted to go back.
   O.R. How he wants to go back.

8 There is a change in choice of function word or another minor shift in the O.R.
   E.R. There was a dinosaur.
   O.R. There was one dinosaur.

9 The syntax of the O.R. is unchanged from the syntax

of the E.R.
E.R. The windows were full of puppies and kittens.
O.R. The windows were full of pets and kittens.

24 Semantic SMANT

This category measures the similarity between meaning in the E.R. and the O.R. The numerals zero through nine represent a scale of increasing similarity.

0 The meaning of the O.R. and the E.R. are unrelated.
E.R. One side of the store was covered with rows of smaller tanks.
O.R. One side of the store was covered with rows of smaller tranks.

1 The meaning of the O.R. is vaguely related to context.
E.R. "Let's go!" said Danny. A policeman...
O.R. "Let's go!" said Danny. I...

2 The meaning of the O.R. is appropriate, but unrelated to the E.R.
E.R. Lan Ying stared across the river.
O.R. Lan Ying started across the river.

3 The meaning of the O.R. is semantically associated with either prior or subsequent portions of the text.
E.R. - and yet he, too,...
O.R. - and yet he knew,...

4 There is some association between the meaning of the O.R. and the E.R.
E.R. Her sense of routine told her...
O.R. Her sense routine told her...
Or, there has been a meaning change resulting from a shift in intonation.
E.R. ...under water, snails,...
O.R. ...under water snails,...

5 The E.R. and the O.R. are antonyms.
E.R. Inside there was usually...
O.R. Inside there was unusual...

6 The O.R. has an associated meaning with the E.R.
E.R. Danny had to hold up the wires for him.
O.R. Danny had to hold up the telephone...

7 The O.R. involves a slight change in connotation.
E.R. ...to think of her baby brother...
O.R. ...to think of her new baby brother...
Or, a similar name substitution.
E.R. Mr. Barnaby was...
O.R. Mr. Barnberry was...

8 The E.R. and the O.R. are synonyms.
E.R. The lady's wig was...
O.R. The lady's fake hair was...

9 There is no change in meaning between the E.R. and O.R.

E.R. The dinosaur was so tall Danny had to hold up the wires for him.
O.R. The dinosaur was so tall that Danny had to hold up the wires for him.

25 Transformations TRANS

This category indicates whether or not the miscue involves a grammatical transformation. Transformation here is interpreted to be a syntactic change:

toward or away from the deep structure of the E.R.
toward or away from a new deep structure

0 No, a grammatical transformation is not involved.
1 Yes, a grammatical transformation is involved.
 E.R. It would be nice to play with a dinosaur.
 O.R. It would be nice to play with one.
 E.R. The dinosaur was so tall Danny had to hold up the wires for him.
 O.R. The dinosaur was so tall that Danny had to hold up the wires for him.
9 There is some doubt about whether or not the change has resulted in a transformation.

26 Trans-category TCAT

This category is used when category 25-1 has been marked.

1 The deep structure that the reader infers is different from the author's.
 E.R. As they approached the tent, the thin wail of coyotes reached her ears from upstream, far to the north.
 O.R. ...reached their ears...
2 The deep structure of the author and the reader is identical. But the reader used a different set of transformation rules to generate the surface structure.
 E.R. He went.
 O.R. He goed.
3 The deep structure of the author and the reader is identical. But the reader used an alternate set of transformation rules to generate the surface structure.
 E.R. Peggy plunged over the brow of the knoll into the tangle of slashing coyotes and whirling dog.
 O.R. ...and the whirling dog.

27 Intonation INTØN

The concern in this category is for whether or not intonation was involved in the miscue.

0 Intonation was not involved in the miscue.
1 Intonation within the word(s) of the miscue was involved.
  E.R. He looked under the chair.
  O.R. He looked un+der the chair.
2 Intonation between words was involved in the miscue.
  E.R. ...came from jungle rivers where...
  O.R. ...came from Jungle River where...
3 Intonation which was relative in the phrase or sentence was involved in the miscue.
  E.R. ...that grew under water, snails, and...
  O.R. ...that grew under water snails, and...
4 Intonation which was terminal to the phrase or sentence was involved in the miscue.
  E.R. ...had flown over. Joel's father...
  O.R. ...had flown over Joel's father...
5 A substitution of a conjunction for a terminal punctuation or of a terminal punctuation for a conjunction occurred in the miscue.
  E.R. The boys fished and then they cooked their catch.
  O.R. The boys fished. Then they cooked their catch.
6 Intonation concerning direct quotes was involved in the miscue.
  E.R. "Tom," said mother.
  O.R. Tom said, "mother."

28 Syntactic Acceptability SYNAC

This category is concerned with the acceptability of the syntax and is approached from the view of what is acceptable within the reader's dialect.

0 No, the miscue results in a structure which is completely syntactically unacceptable.
  E.R. A policeman stared at them.
  O.R. I policeman stared at them.
1 The miscue results in a structure which is syntactically acceptable only with the prior portion of the sentence.
  E.R. Inside there was usually a parrot or a monkey,...
  O.R. Inside there was unusual a parrot or a monkey,...
2 The miscue results in a structure which is syntactically acceptable only with the following portion of the sentence.
  E.R. The coyote had just sensed the loss.
  O.R. The coyote had John sensed the loss.
3 The miscue results in a structure which is syntactically acceptable only within the sentence.
4 The miscue results in a structure which is syntactically acceptable within the total passage.
  E.R. He wanted to see what was inside.

O.R. He went to see what was inside.

31 Semantic Acceptability SEMAC

This category is concerned with the acceptability of the meaning and is approached from the view of what is acceptable in the reader's dialect.

0 No, the miscue results in a structure which is completely semantically unacceptable.
   E.R. He saw guns. O.R. He saw guss.

1 The miscue results in a structure which is semantically acceptable only with the prior portion of the sentence.
   E.R. He put the peanuts in his mouth and ran back to the hole.
   O.R. He put the peanuts in his mouth and can back to the hole.

2 The miscue results in a structure which is semantically acceptable only with the following portion of the sentence.
   E.R. The coyote had just sensed the loss.
   O.R. The coyote had John sensed the loss.

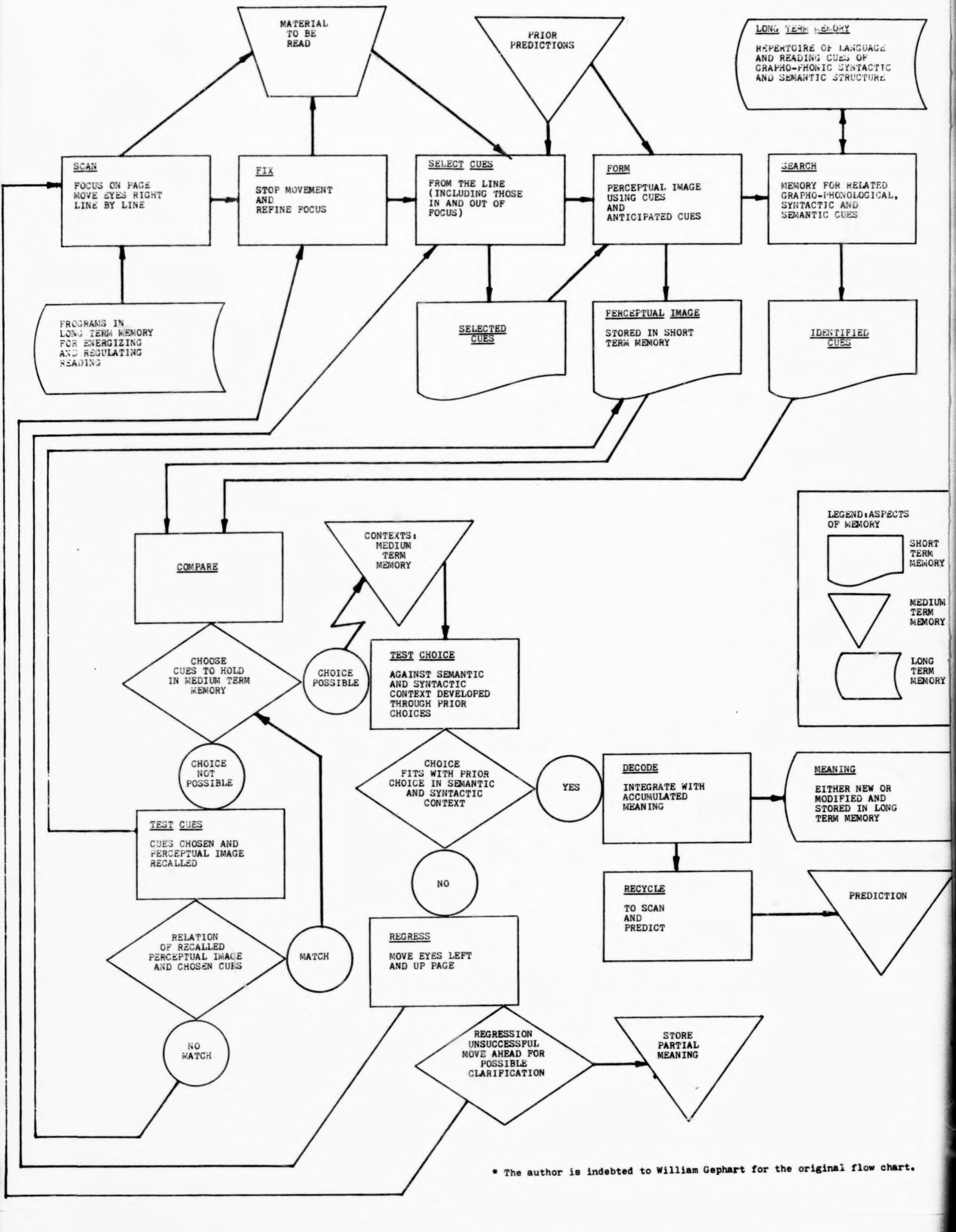
3 The miscue results in a structure which is semantically acceptable only within the sentence.
   E.R. Danny had to hold up the wires for him.
   O.R. Danny had to hold up the telephone wires for him. (Telephone wires are not in the story, nor do they fit in.)

4 The miscue results in a structure which is semantically acceptable within the total passage.
   E.R. He wanted to see what was inside.
   O.R. He went to see what was inside.

APPENDIX B

THE GOODMAN READING MODEL

THE GOODMAN MODEL OF READING


MATERIAL TO BE READ
PRIOR PREDICTIONS
LONG TERM MEMORY
REPERTOIRE OF LANGUAGE AND READING CUES OF GRAPHO-PHONIC SYNTACTIC AND SEMANTIC STRUCTURE
SCAN
FOCUS ON PAGE MOVE EYES RIGHT LINE BY LINE
FIX
STOP MOVEMENT AND REFINE FOCUS
SELECT CUES
FROM THE LINE (INCLUDING THOSE IN AND OUT OF FOCUS)
FORM
PERCEPTUAL IMAGE USING CUES AND ANTICIPATED CUES
SEARCH
MEMORY FOR RELATED GRAPHO-PHONOLOGICAL, SYNTACTIC AND SEMANTIC CUES
PROGRAMS IN LONG TERM MEMORY FOR ENERGIZING AND REGULATING READING
SELECTED CUES
PERCEPTUAL IMAGE
STORED IN SHORT TERM MEMORY
IDENTIFIED CUES
COMPARE
CONTEXTS: MEDIUM TERM MEMORY
LEGEND: ASPECTS OF MEMORY
SHORT TERM MEMORY
MEDIUM TERM MEMORY
LONG TERM MEMORY
CHOOSE CUES TO HOLD IN MEDIUM TERM MEMORY
CHOICE POSSIBLE
TEST CHOICE
AGAINST SEMANTIC AND SYNTACTIC CONTEXT DEVELOPED THROUGH PRIOR CHOICES
CHOICE NOT POSSIBLE
CHOICE FITS WITH PRIOR CHOICE IN SEMANTIC AND SYNTACTIC CONTEXT
YES
DECODE
INTEGRATE WITH ACCUMULATED MEANING
MEANING
EITHER NEW OR MODIFIED AND STORED IN LONG TERM MEMORY
TEST CUES
CUES CHOSEN AND PERCEPTUAL IMAGE RECALLED
NO
RECYCLE
TO SCAN AND PREDICT
PREDICTION
RELATION OF RECALLED PERCEPTUAL IMAGE AND CHOSEN CUES
MATCH
REGRESS
MOVE EYES LEFT AND UP PAGE
NO MATCH
REGRESSION UNSUCCESSFUL MOVE AHEAD FOR POSSIBLE CLARIFICATION
STORE PARTIAL MEANING

* The author is indebted to William Gephart for the original flow chart.

APPENDIX C

READING TEXT FOR SIXTH GRADE SUBJECTS

0101

SHEEP DOG

The rays of the setting sun lingered over the high Arizona desert, touching the rocky tip of Badger Mountain and tinting the bold face of Antelope Rim. The shallow basin of Salt Creek Wash became a gathering pool of darkness where a band of eight hundred sheep with their lambs were bedding down for the night on a small patch of meadow. Two burros, their long gray ears sagging in drowsiness, stood stolidly in the midst of the sheep. The frantic bleating became less frequent as two sheep dogs gently urged the band into a more compact mass and each ewe found her lamb.

It was fully dark when the alert ears of the larger dog caught the sound of a sharp whistle from the small camp a hundred yards up the wash. The dog turned to go, but not until a last look over the band assured her that all was well and that her mate was patrolling the far side.

It had been a long day for the dogs, and Peggy limped heavily as she approached the camp. She went directly to the saddle bag home of her five puppies, born two weeks before while the hard drive had been under way. She nosed the tight huddle sleeping on the canvas flap and lay down. Immediately the five black-button noses were groping eagerly. Her eyes became soft with pride and affection, but she didn't relax, always being aware of her responsibility toward the band. Peggy was a descendant of a long line of good sheep dogs. Her heavy yellow-and-brown coat indicated no particular breed, but her fine head and alert eyes hinted of collies that worked the

Grampian Hills of Scotland.

The pups were sleeping, and she gave her attention to her left forepaw from which two toes were mising. A coyote trap had caught her foot three years before, when she was little more than half grown and just learning the ways of the range and the work of a sheep dog.

The herder came slowly from the tiny tent and spilled the contents of a saddlebag onto the ground. "Here, Peggy, old girl." he said. "This is all I've got for you tonight." He tossed her two cold biscuits, left from the morning meal.

He sat down on an upturned packsaddle and coughed excessively. Peggy gulped the biscuits and looked to the herder for more, not understanding the lack of food. The herder was still coughing, and he nodded his head to Peggy. This evening there was no cooking fire, and Peggy trotted off to search the camp for scraps of bones, but there was nothing. She sniffed the cool air of the late Spring drifting down the wash, before lowering her head to drink the cold water of the small stream. Through the still night the yelping wail of a coyote was brought to her ears. A growl swelled in her throat, and she froze, looking intently into the darkness over the low knolls to the east. Her trained ears told her it was only one coyote she heard. She turned questioning eyes to the caughing herder and then to the sheep and the shadowy figure of Chip moving about the band.

The dog's uneasiness, growing for the past two days, now became more acute. The routine was different, and she could not understand this rush to keep the band moving. Why hadn't the herder butchered and cooked for himself and the dogs? Why did the dogs have to work more than usual? Why were there no coyote fires at night? A high, thin wail came from the north this time, alerting both herder and dog. He lifted his head wearily and talked to his dog, as all herders do. "Well, Peggy, they're closing in. We'll just have to build fires again. It's been a bad year for rabbits, and the coyotes are hungry." He picked up a small hatchet and started toward the rimrock west of camp.

Peggy was following. Her hunger made her sniff hopefully under rocky ledges and along the small trails in the sage. The building of coyote fires was not new to her, although she was puzzled by the frequent stops when the herder rested after coughing spells. Each evening they made a wide circuit of the bedding grounds and build fires on high points, where they could be seen for miles around. On nights when the fires were burning, she often heard coyotes singing a protest from distant ridges, while the sheep rested safely.

The herder lighted some brush against a dead juniper tree on top of the rimrock, not bothering to stack limbs against the trunk. Peggy felt the difference in procedure; still she moved toward the place where the next fire might be built. A short whistle halted her. The herder was heading for camp.

"Come, Peggy. Let's go. One fire is all I can build tonight. It's not enough, but it will have to do. The rest is up to you and Chip." She tucked her nose into his hand, and he patted the side of her head and gently pulled her ear; then he grabbed a handful of fur about her neck. He shuffled slowly down the hill. "Good dog. You've got lots of work to do, for I'm no longer of any use."

She had never heard this tone and she gave him a questioning look.

"We're two days out from the corrals and a day late on the drive. I sure hope the boss rides out to meet us." The words "corrals" and "boss" meant things to Peggy, and she whined in recognition.

As they approached the bedded sheep, the moon rose, its cold light transforming the desert into a maze of line and shadow. Chip splashed through the shallow stream to meet them.

The herder patted Chip and gave an arm signal toward the flock. "You'd better stay here, old fellow. Don't want those sheep disturbed." Chip was hungry and had expected food, but he sat facing the sheep. The herder made a slight movement with his hand, and Peggy knew she was to follow him.

The slanting rays of moonlight probed the shallow wash. As they approached the tent, the thin wail of coyotes reached her ears from upstream, far to the north. Herder and dog stopped to listen as the chorus rapidly rose and fell.

"Well, Peggy, sounds like about three of them have spotted our fire. Guess they didn't have luck hunting alone."

Peggy sensed the concern in his voice. She, too, knew that three coyotes had joined forces and that hunger was driving them to the sheep. Peggy lay down with her puppies; the herder stumbled into his tent...

It was less than an hour before dawn. The moon had set. All was quiet. As Peggy lay watching, the shadowy form of Chip appeared between the gray blur of the sheep and the knolls to the east. His actions gave no hint of alarm. Then her eyes caught a movement in the sage near the top of the knoll, and she looked quickly to Chip, whose slow pace was unchanged. There was no breeze to cause movement in the brush.

Her muscles tensed. As she started forward, Chip wheeled to face the knoll. A coyote emerged from the edge of the sage, not fifty feet away, walking with its head down toward the dog. Chip held his stance between the sheep and the danger. The coyote's walk was not that of a rabid animal, nor was it the creeping approach it used in attacking the sheep. It moved steadily forward. As Chip leaped toward the coyote, it whirled and ran lightly up the slope, staying tantalizingly ahead and leading Chip toward the brow of the knoll. Peggy's desert training had taught her the answer to this maneuver. She raced toward the spot where the coyote and Chip had disappeared from sight. She was too late.

The coyote had laid a successful ambush for Chip, who was fighting for his life. Peggy plunged over the brow of the knoll into the tangle of slashing coyotes and whirling dog.

The impact of her charge split up the fighting animals and sent one coyote spinning to the ground. The nimble beast leaped away from her flashing teeth and was gone. The others followed after. Peggy stood over her mate, awaiting an attack that didn't come. Finally Chip dragged himself to his feet. He had a vicious tear at his throat, the tendon above one hind leg was severed, and his life spark was flickering.

Limping slowly on three legs, he sought sanctuary in the herder's camp. Peggy raced to the sheep.

The band that had been huddled about the stoic burros was a mass of bleating movement. The alarm of the ewes, frantic for their lambs, was contagious. The band overflowed the bedding ground and started up the hillsides.

Peggy needed all her skill as she fought to control her charges, turning group after group back toward the center. She concentrated on the leaders, knowing that the others would follow. Barking occasionally to reassure them in their fright, she circled the band again and again as she had been trained. At last it was milling, going nowhere. When it became quiet, she was spent and trembling.

The peaceful glade was filling with warmth from the sun as the sheep moved to the creek for water, then spread slowly toward the hillside to search beneath the sage for succulent bunch grass. Peggy looked again and again toward the camp. The herder should be here to start them on the trail as he had each morning in the past. The sheep were hungry and wouldn't stay long in one place. A few lambs were already running astray, and she turned them back to the band before she set out for the camp.

At the sight of her, the puppies stopped their feuding and waddled hopefully toward her; but she turned to the open tent, hesitating under the flap before she walked in, and sniffed at the silent form. Urgently she pawed the ground and whimpered, but there was no response.

For a moment she stood by the bed, then bounded from the tent so fast that the puppies scurried into the saddlebag. She looked toward the sheep down the canyon before thrusting her head into the bag with the hungry puppies. She turned once more to the tent, halting after a step or two when she saw Chip lying a few feet away.

She trotted to him, sniffing at his still head, whining close to his ear, pawing his shoulder. Then she licked the wound at his neck. He didn't move. She turned away and went through the camp. She barely turned her head in the direction of the puppies as she walked toward the unguarded sheep. She realized that she was alone and that the safety of the band depended on her.

The band was fanning out across the hillside in search of grass. Peggy drove a few stragglers back into the fold, then worked up the hill, turning the flock so that all would feed in the same direction. She patrolled the upper edge, watching carefully that none should pass through the breaks in the rimrock to the plateau above, where they would become easy prey to the coyotes. In the past, Peggy had known the herder's rifle to speak out sharply against a bold coyote. Today there was no herder.

She did not leave the band or relax her vigilance. The sun was high when she turned the sheep down from the hillside and across Salt Creek, then back toward the camp on the far side. Shadows filled the valley by the time she urged them to the bedding ground. As she passed the camp, she saw her forlorn puppies huddled at the saddlebag, and the urge to go to them was strong.

Turning away, she ran ahead of the sheep to hold them at the bedding ground.

It was well after dark when they were quiet and she could return to camp. Her tail dropped in weariness and her head bobbed at each step, for the shale of the hillside had cut deep into the pads of her feet. She stopped beside the saddlebag, and the puppies scrambled over her, searching for milk she didn't have.

She went to a saddlebag containing pots and pans and pawed it open, spilling the contents onto the ground. She found the pen from which she had been fed many times, and licked it carefully. Then she discovered a bit of grease clinging to the frying pan. The meager taste of food only made her hunger worse, and she tore frantically through the other bags. There was nothing more to eat.

Her sense of routine told her it was time to build the coyote fires, but the tent was silent when she stopped at the open flap. If there were no fires tonight, she must return to the band.

She made a circle about the sheep, limping at each step, then started a much wider circle, stopping on the knoll to look across the open desert and test the air for danger. Far to the south, a coyote call was answered by another far to the east. Peggy looked to the south, then to the east, and began her slow circle.

Below her, she heard the blast of a lamb that had wandered away from its mother, and she raced to it, brushing it roughly, knocking it down. The helpless animal at her feet brought her hunger to mind, and she held it down with her paw, reaching savagely for its throat. The strong sheep odor sweeping through her nostrils stopped her. She had eaten mutton many times from the hand of the herder, but she had never killed a sheep. She raised her paw, letting the lamb get to its feet, and drove it gently back into the band.

Long hours passed without incident while Peggy guarded the sleeping flock. As she plodded back to camp, she sniffed at the hard-packed meadow for field mice. Finally giving up in weariness, she lay down with her pups. In an hour or two the moon would pass below the jagged peaks to the west. Peggy tried to sleep, but it was no use. Her hunger was so acute she could no longer lie still, and she got up to make another search for food before going back to the sheep.

0700

The band was quiet as Peggy slowly approached. She quickened her pace when she saw that one burro was awake and standing, its head held high, its long ears to the east. She sniffed the edge of the sage toward which the burro's ears were pointed. She smelled nothing but the sheep. While she was working carefully around the band, a great owl sailed down the canyon on silent wings, skimming a few feet above the sheep. She moved upstream a few yards when suddenly the second burro stirred. Peggy turned to look. The band was quiet; only the ears of the burros justified her alarm. Alert to the danger of ambush, she moved into the sage, taking each step noiselessly. The coyote scent eluded her now, and she stopped on the top of a small rise, testing the air, listening to the stillness. Then, from the base of the next knoll, came the startled bleat of a sheep, followed by a second bleat that rang with fear, and a third filled with pain before it was choked to silence. Peggy plunged through the sage.

In a depression about twenty feet wide, shaped like an amphitheater, a defenseless ewe had been brought down. A slashed tendon and torn throat were visible. Two coyotes stood tensely over their kill.

At the sound of the agony in the ewe's last bleat, all caution left Peggy. There was no time for a deceptive approach or planned attack. The final leap of her headlong charge carried her from the rim of the hollow into the midst of the surprised coyotes.

They acted instantly to avoid the dog's long white teeth. Their movements hindered each other, and Peggy's heavy shoulder struck one coyote on the hindquarter, sending it off its feet. Her momentum carried her to the back of the hollow. Stumbling on the steep slope, she turned at bay. The coyotes nimbly leaped to opposite sides of the hollow, stopping to turn back at the rim. They had tasted blood and were not to be cheated of their prize by the weakened sheep dog, who stood silently by the dead ewe. The two had hunted as a team and were masters of feinting, dodging, slashing, and killing. From opposite sides of the basin they snarled down on Peggy with teeth bared, ears flat, the hair on their backs raised, and their feet spread for a sudden spring.

The coyote on Peggy's right made a sudden leap that carried it halfway to the dog. She turned to meet the threat, only to have her left shoulder torn by the needle-sharp fangs of the second coyote. The first animal had merely feinted, then leaped out of the way. Their method of fighting was not to come to grips with an adversary but to worry and torment it until a hamstring could be out and their prey was helpless; then to the kill. Both coyotes regained their vantage points at each side of the hollow, and this time the thrust came from the left. As Peggy turned to face it, her right flank was ripped. The first coyote followed through this time, and for a moment, both coyotes and Peggy were a snarling whirl of fury. One of her ears was in shreds, and bunches of fur were torn from her neck before the coyotes danced away.

Peggy felt the weariness in her bones and the sluggishness in her muscles as she edged farther into the hollow so that the coyotes could not get behind her. An overpowering urge for escape surged through her, but when her hind legs backed against the dead ewe, the desire for flight left her. The sheep must be protected.

She felt almost overwhelmed as she faced the coyotes. She stood on her hind feet and fought fang to fang with one of them who tore chunks of fur and hide from her neck, while the other slashed a hind foot. Then both leaped out of range.

Regaining her position with her back to the ewe, Peggy knew that her quivering muscles would not respond much longer. Then she remembered her advantage when she had surprised the coyotes, and she gathered herself for a final effort. She looked up at the snarling coyotes on either side, watching as they settled themselves for their next assault.

The darting attack came as before. This time Peggy leaped forward instead of turning to meet one of her enemies. In mid-air she crashed into the coyote on her right. Her greater weight kept her on her feet as she had sensed it would. The coyote rolled over and over. Before it could get up, Peggy drove her fangs into the back of its neck with all the fury of her pain and fear. Her teeth sank deep until they were stopped by bone. With a mighty heave, she lifted the smaller animal off the ground. There was a twisting yank, and something snapped.

The other coyote turned back to the fray as Peggy loosed her grip on the animal at her feet and slowly raised her head, teeth bared and ears flattened. She took one slow step forward and saw the coyote hesitate; then another step as it spread its back feet to spring; a third step, and the coyote turned its head sharply from side to side. Looking past her, it changed the position of its front feet. Peggy's numbed brain told her to move forward. She could not know that the coyote had just sensed the loss of its mate and felt fear for the first time. She was relieved when it jumped sideways and disappeared as she took her fourth step.

For a moment, she dully watched where the coyote had been, her teeth still bared in a silent snarl. Slowly her fear left, and weakness took its place. She sank down, too sore and faint to lick her wounds...

The morning sun was warm, and the sheep were spreading over the sides of the shallow wash before Peggy was able to struggle to her feet. Her painful steps took her through the sage and across the bedding ground. It seemed to be an endless distance to the camp. Again and again she paused, and it seemed she would just collapse. The sounds of the sheep beat upon her, but she could not go to them yet. Though her eyes were open, she failed to see that two men had ridden down the canyon to the camp and were dismounting from their horses.

"You were right about the camp, boss." said the younger man. "When we saw it from up on the ridge, you said there was something wrong. I can see a few sheep and hear more farther down the canyon. They must be scattering."

The boss took in the camp at a glance, missing nothing. He stepped into the tent, only to return in a moment to say, "It's worse than you think, Jake. The herder is dead. Been dead some time." He walked to the body of Chip, and as Jake approached, the boss said simply, "Coyotes."

He had turned his attention to the yapping puppies, backed as far as they could into the saddlebag, when Jake stepped to his horse and drew a rifle from the scabbard. "Hey, boss," he called softly, "what do you make of this coming along the edge of the sage? Whatever it is, it's got the blind staggers." He raised his rifle.

The quick eyes of the boss found what Jake saw, and he shouted, "Don't shoot! That's Peggy." Both men stood still as the big dog went past, without noticing them, to lie down heavily near her pups.

"What a heck of a time she's had! Get some grub -- lots of it," the boss said softly.

"Sheep Dog"
Widening Views (8)
Sheldon Basic Reading Series
Allyn and Bacon, Inc.

APPENDIX D

READING TEXT FOR FOURTH GRADE SUBJECTS

MY BROTHER IS A GENIUS

"If it bothers you to think of it as baby sitting," my fathe said, "then don't think of it as baby sitting. Think of it as homework. Part of your education. You just happen to do your studying in the room where your baby brother is sleeping, that's all." He helped my mother with her coat, and then they were gone.

So education it was! I opened the dictionary and picked out a word that sounded good. "Philosophical!" I yelled. Might as well study word meanings first. "Philosophical: showing calmness and courage in the face of ill fortune." I mean I really yelled it. I guess a fellow has to work off steam once in a while.

My baby brother Andrew made a few silly baby sounds and began to cry.

"Philosophical!" I shouted. "Go ahead and cry! Cry all you want to! It won't disturb me!" But I began to feel a little foolish and ashamed. After all, it wasn't Andrew's fault that I had to stay home with him.

I leaned on the baby bed. "You see," I said, "it helps me to remember the word definitions if I read them out loud. They impress my mind better that way." Andrew stopped crying and tried to take hold of the dictionary. "Let's see what we can find in the S's," I said. "Savage: wild; not tamed. Sinewy: stringy, strong or powerful."

The S's seemed to quiet Andrew down. I guess they do have a soothing sound. In a little while he was asleep.

I went on reading the words aloud. We're supposed to learn a certain number of definitions for English class each week. Besides, our teacher says if you know how to think and know enough words to express your thoughts, there isn't anything you can't say or do.

I don't know about that, but I know we get a good education in our school. And they encourage special projects. Every year they give a prize to the student with the most original outside project. You don't have to be a genius to win the prize, just smart enough to plan something really interesting and original. New, but not crazy or useless. I was hoping to win, this year.

I sat looking down at Andrew. Suddenly I jumped from the chair, a wonderful idea implanted in my brain. "Andrew," I said, "you are my project. And not only that, but you may be a real valuable gold mine. Wait and see!"

The next day at noon, as soon as classes let out for lunch, I called the local television station. It's just three blocks from the school. "Yes, miss, it's very important," I said to the lady on the telephone. "An important project depends on it."

"All right," she said after a pause, "Mr. Barnaby will see you if you come over right away."

Mr. Barnaby was a very busy man. As the lady led me toward his office, she said, "Mr. Barnaby is a very busy man." I sat in a large leather chair in front of him. "I'm a very busy man," he said, hanging up the two telephones into which he'd been talking. "My time is very valuable. What can I do for you?"

I cleared my throat and said, "I want to sell my little brother. That is - I mean I think just about everybody likes babies."

"How much do you want for ... Oh, of course everybody likes babies!" Mr. Barnaby said.

"I have an idea for a TV program," I said.

"Splendid! Splendid!" he said, putting the tips of his fingers together and nodding his head. "We could put it on between nine and ten on Thursdays and ... Wait a minute! You haven't told me what the idea is, yet!"

"Well," I said, "my baby brother is a pretty good brother." Then I added, "As little brothers go."

"Now see here! I'm a very busy man!"

"Yes, sir. Well, my idea would be for you to choose a baby for your TV programs. The baby could advertise things like - well, milk or baby clothes. There are lots of things babies use. You could get a sponsor."

Mr. Barnaby was impressed. "Hmmm," he said, "you may have an idea of value." He walked around the office, thinking. "Yes. We could have a contest and pick a baby out of all the babies in town."

"Excuse me, sir," I said, "but I think it would be better not to have a contest. If you have a contest, then all the mothers whose babies don't win will be mad at you. They might even refuse to buy the things you advertise on your station."

Mr. Barnaby stopped pacing. "Hmmm," he said. "You may be right. Wouldn't want to imperil our good will."

"And so you could just pick my little brother," I said. "He'd do just as well as anyone else his age."

"How old is he?

"Eight months," I said. "But he's going on nine."

"Hmmm," said Mr. Barnaby, "let me see now." He was pacing the floor again. "The typical baby. That's it. Typical! A baby like everyone else's baby. A baby everyone will love. An excellent idea!"

"Sure," I said. "We could take some moving pictures of him when he's at his best."

"Nonsense, my boy," Mr. Barnaby said. "If we do this, it will be a live show. Live, boy, live!"

"But what if he cries or something?" I asked.

"All babies cry," said Mr. Barnaby. "He wouldn't be typical if he didn't cry sometimes. Typical, that's it, typical. The typical baby!"

"Yes, sir," I said.

He placed a hand on my shoulder. "You know," he said, "I think you may have hit on a gold mine, my boy. Where can I see this baby brother of yours?"

"Well, he's home a lot," I said.

Mr. Barnaby frowned and glared at me.

"Our address is 221 Forest Road," I added hurriedly.

That evening Mr. Barnaby telephoned and then came to the house. After he'd talked to my mother and father for a while, they took him into the bedroom. He leaned over the crib and wagged a finger at my little brother.

"Say da," Mr. Barnaby chuckled.

"Da," said my little brother, grabbing for the finger. Mr. Barnaby chuckled again. Andrew had made a very favorable impression.

Mr. Barnaby talked some more with my folks. "It's settled then," he said as he was leaving. "Be at the station with that fine baby a week from Saturday at 10:30 in the morning. You know, this boy of yours is quite a businessman." And he gave me a big wink.

A week from Saturday seemed a long way off. I read a lot so the time would go faster. I even found that studying made the time go faster, too. The word definitions were helping my marks in English, too. I read a lot of them out loud nearly every evening.

If Andrew was crying when he should be sleeping, I just turned to the S's and started reading a lot of soft-sounding, soothing words. In a few seconds he would fall asleep. He seemed to like the history lessons, too, but his favorite was the dictionary.

Genius at Work!

When the day came at last, my mother dressed Andrew in a new outfit. I stood looking down at him when we were almost ready to go. He really was a pretty good kid; I couldn't help feeling proud. I leaned over the crib, pointed a finger at him and said, "Say da."

Clearly and distinctly Andrew said, "Philosophical."

At first I just looked at him. "Philosophical?" I asked. "Did you say philosophical?"

"Communication," he said, also clearly and distinctly.

"Mother! Dad!" I yelled. "Andrew isn't typical! He's - he's a genius! We've got to call the TV station!"

"Horizontal," Andrew said.

I ran to the telephone and called the station. While I was waiting for Mr. Barnaby's wire, Andrew said, "Reflex action."

"Mr. Barnaby!" I said at last. "Andrew isn't an ordinary baby! Do you know what he just said?"

"Never mind that," he said. "Bring that fine boy over here right away. We're setting up lights and cameras."

"But Mr. Barnaby," I said, "Andrew just ..."

"Get that baby over here!" he shouted. "I'm a very busy man."

On the way to the station I kept telling my parents what had happened. "We've got to tell Mr. Barnaby," I said. "This baby is not typical."

"I never thought he was typical!" my mother said. There was pride in her voice.

At the station Mr. Barnaby rushed us into the studio and pushed a crib for Andrew under one of the big cameras. There were glaring spotlights and floodlights, and cables rigged up everywhere. There was a glassed-in part along one whole side of the studio - the control room. There two men were signaling to each other, and one was pointing to the clock.

I still thought we should tell Mr. Barnaby, but he was rushing around giving orders to lighting crews and cameramen. At last he leaned over the crib.

I held my breath.

He wagged a finger at Andrew and said, "Say da."

"Intellectual," my little brother said, loudly and clearly.

Mr. Barnaby straightened up, still holding the finger over the crib. He stared at Andrew. His face turned red.

"Intellectual?" he cried. "Intellectual?" His hands dropped to his sides. "This ... baby ... isn't ... typical," he moaned, and there was a distinct quiver in his voice. He looked helplessly at first one cameraman and then another. Finally he looked at me. "You!" he said in a sickly whisper. "You!" He stood with his feet wide apart and brought his hand up slowly, pointing at me. "You!" The pointing finger rose and fell with his heavy breathing. His eyes were glaring and wild.

I backed away. "I didn't ... I didn't mean ... I tried to tell you ... sir!"

Mr. Barnaby slumped into a chair. "In five minutes we go on the air," he said, "with the 'typical baby.' The baby we've been advertising all week. Typical! Ha!" He threw his arms high and let them fall limply on his lap. Then he slumped still farther.

"Sir," I said, "is there a dictionary here?"

He nodded.

"Where?"

He pointed to the door. "Front office. Miss Brown," he said, staring at the floor.

I dashed out of the studio, found Miss Brown and was back in a few seconds. I stood by the crib and opened the dictionary. I opened it to the S's. "Andrew, listen to this," I said as calmly as I could.

"Newspaperwoman," Andrew said.

I started to read. "Sleigh, snow, soak, society, soften, soldier, sorrowful, soup, stormy, stroke, survive ..."

Andrew's eyes drooped, then closed. I went on reading, and when I looked down again, Andrew was asleep.

Someone stuck some papers into Mr. Barnaby's limp hand, and it made me feel good to see him get control of himself when he absolutely had to. He came out of his slump and looked around. Suddenly he jumped up and stepped in front of the cameras. A light flashed over the control room, and there was a blare of music. At first I thought the noise would wake Andrew, but he went on sleeping. The S's had done it.

I don't remember what Mr. Barnaby said during the televised program. But I remember the cameras moving close to the crib and Mr. Barnaby bending over and saying soothing things to Andrew - but not too loudly. There were tears in Mr. Barnaby's eyes as he finished his speech. His voice was swallowed up in a loud blare of "Rock-a-by Baby," which woke Andrew, but by then the program was over, anyway.

Mr. Barnaby took us out of the studio, clear to the front door, patting his face with a large handkerchief. When we were out on the street, I saw that my mother was smiling broadly. "It serves him right for calling a child of mine typical," she said.

My father was folding the check Mr. Barnaby had given him. "This will make a nice start on paying for Andrew's college education," he said. "Though I'm not sure he needs one," he added.

"I think I'm going to win the prize for the most original outside project this year," I said.

"Philosophical," said my baby brother.

"My Brother Is a Genius"
Adventures Now and Then (6)
Betts Basic Readers
American Book Company

APPENDIX E

READING TEXT FOR SECOND GRADE SUBJECTS

FREDDIE MILLER, SCIENTIST

Poor Freddie was in trouble again. He had been experimenting with his chemistry set, and Elizabeth's doll had turned green.

His little sister was heartbroken. Freddie's mother was angry. "You've wrecked that doll!" she exclaimed. "What queer experiment was it this time?"

"I was only washing the doll to make it look like new," Freddie explained. "I made a special mixture. But I guess I added too many chemicals to the mixture."

"I guess you did," Mrs. Miller said. "You are just like your Uncle August - never letting well enough alone."

Freddie had heard a lot about Uncle August, and a lot about his other uncles, too. All of them were living in Switzerland, where Mrs. Miller had grown up. She was always comparing Freddie with one of them. Good or bad, he was always like one of the uncles!

His father usually called him Tinker because he loved to tinker with machines, tools, and chemicals. But what his mother called him depended on what he had done last!

"I think you should buy another doll for Elizabeth," she was saying now. "I want you to save half your allowance for it each week."

Freddie nodded sadly. Sometimes he thought that a scientist's life was filled with disappointments.

After the cut in his allowance, Freddie's chemistry experiments narrowed to those safely outlined in a library book. But he still thought it more fun to pretend to be a great scientist, mixing the strange and the unknown. None of the chemicals in his set was harmful or likely to explode. Yet by accident he might discover a misture that would change the world.

Then one day Freddie made an interesting mixture that was dark and cloudy, and had a queer smell. "I'll keep this for a while," he thought happily. "It's pretty good."

Later that day Mrs. Miller went to the kitchen to get supper ready. When she opened the refregerator door - well, this is what she told her husband:

"The worst smell! I thought I would faint! I thought the refrigerator would explode. I knew it was Freddie's fault!"

While Freddie cleaned out the refrigerator, his mother kept saying, "Just like your Uncle Maximilian! His clothes were always smelling of chemicals."

Freddie didn't mind being compared with his Uncle Maximilian, who was a real chemist with a company in Switzerland.

By accident Freddie's next experiment was in a field that had nothing to do with chemistry. One day at breakfast his father said, "The alarm clock didn't ring this morning. I hope it isn't going to give us trouble!"

As he was eating, Freddie decided to fix the clock. Then the next morning, his father would say, "Why, the clock works after all!" And Freddie would say, "I fixed it, Father. It was easy."

There was only one thing wrong with this dream. Freddie knew that his mother would say, "Just like Uncle Oscar - always so helpful."

As surely as he knew the alphabet, Freddie knew that Uncle Oscar must have been a terrible goody-goody. Still, even Uncle Oscar couldn't keep Freddie from enjoying the moment when his parents discovered who had fixed the alarm.

Taking the clock to the cellar, Freddie worked hard on it. Then, winding it and setting it carefully, he returned it to his parents' room.

At supper he was careful not to speak of the secret. Once, however, he forgot himself; he looked at the butter and said, "Please pass the clock."

That night Freddie dreamed that his teacher was talking angrily to Father. All the time the school bell was ringing, ringing. The dream was so strange that Freddie told his parents about it at breakfast.

"That wasn't the school bell," said Mrs. Miller. "The alarm went off at three o'clock in the morning! It sounded like a fire siren. It was enough to wake the dead."

"Three o'clock!" Freddie said in a serious voice. "That can't be! I set it for seven."

"You what?" Mr. Miller asked angrily.

When Freddie told how he had fixed the clock, Mrs. Miller said, "You're just like Uncle Charles. My brother Charles was always tinkering with clocks in Switzerland."

Mr. Miller sighed. "Seriously, Tinker, sometimes I wish you didn't want to be a scientist."

Then one afternoon, when Mrs. Miller had gone to visit a neighbor, Freddie hurried to his cellar worktable. He was making an electric bell as a surprise for his mother. Just as he got the parts in place, he heard a faint tapping and a voice calling, somewhere above.

When Freddie ran up from the cellar, he heard his sister's voice calling, "Freddie! Freddie!"

"Where are you?" he shouted.

"In the hall closet!" came Elizabeth's tearful reply. "The door blew shut. It's stuck! I can't get out!"

Freddie tried, with all his strength, but he couldn't open the closet door, either.

"I'll get Mother," he called to Elizabeth. He knew this could become a serious matter.

His sister's cries grew louder. "Don't leave me alone. It's dark in here."

Freddie, trying to think, looked up at the small window above the closet door. He had an idea!

"Listen, Elizabeth," he called. "I'll fix a light and d it to you through the transom. Then I'll get Mother. All right?"

Elizabeth stopped crying. "All right, Freddie. But hurry. It's very dark in here."

At once Freddie set to work seriously at something he had started for fun. He ran to the cellar and picked up the small battery he had intended to use for his mother's bell. In his tool box he found another battery, a ruler, a coil of copper wire, a small bulb, and tape.

Carefully he taped the batteries end to end on the ruler so that they touched. He taped the wire tight across the bottom of the end battery. Then he ran the wire up the sides of the two batteries to the bulb. After winding the wire around the bottom of the bulb, he taped it in place.

Next he placed the bulb so that it touched the cap on the top battery. The bulb began to glow! Freddie taped the bulb in place on the ruler. Now he had a homemade flashlight for Elizabeth.

He tied a string around the end of the ruler and hurried back upstairs. Pulling the kitchen stepladder out into the hall and climbing up on it, he found the transom within easy reach.

"Elizabeth," he called. "I'm going to drop this light down to you through the transom. Catch it by the ruler and let me know when you can reach it."

The next minute Elizabeth cried, "I have it, Freddie."

"Hold it by the ruler," Freddie told her. "Now I'll go get Mother. Both of us together can open the door. Well be back soon. Don't be afraid."

"All right," answered Elizabeth. "It's not so bad with the light. It's not so scary. You're wonderful, Freddie."

That night, when Mr. Miller came home, Elizabeth was waiting for him at the front door.

"Father! We have something wonderful to tell you," she cried excitedly as she pulled him by the hand into the kitchen.

In one corner of the kitchen, Freddie was busy working on an experiment. Mrs. Miller was getting supper ready.

"Now what's all this about, Elizabeth?" asked Father. Then seeing Freddie ... "What are you doing in the kitchen with those things?" he wanted to know.

"But, Father," cried Elizabeth, dancing about with excitement. "Wait until you hear what happened!"

Mr. Miller heard the story three times - from Freddie, from Elizabeth, and from Mrs. Miller!

"Tinker," he said, "I'm proud of you. Elizabeth would have had a bad time without your help. Sometimes it's worse to be badly frightened than it is to be hurt."

Freddie's mother looked proud, too. "After this we must make some allowance for experiments that do not turn out so well. Such quick thinking! Freddie, you're just like ..."

"Uncle Maximilian?" asked Freddie.

"No," his mother replied.

"Uncle Oscar?" Freddie made a face.

"No." Now she was laughing, too.

"Uncle Charles?" asked Mr. Miller.

"No."

"Then it must be Uncle August," said Elizabeth.

"No." Mrs. Miller smiled at them, and then she said something that made Freddie feel fine all over. "Do you know, Father, he's just like you!"

"Freddie Miller, Scientist"
Adventures Here and There (5)
Betts Basic Readers
American Book Company

APPENDIX F

COMPREHENSION RATING SHEET

Kenneth S. Goodman
Wayne State University

READING RESEARCH

Comprehension Rating

Name________________________________ No. __________________

1.	Character Analysis		
	a. recall	(5 points)	________
	b. depth	(5 points)	________
2.	Storyline		
	a. kernel (theme)	(5 points)	________
	b. sub-plot	(5 points)	________
	c. subtleties (humor or pathos)	(5 points)	________
	d. sequence	(5 points)	________
	e. completeness	(5 points)	________
3.	Plot	(5 points)	________

APPENDIX G

PERSONAL DATA SHEET

PERSONAL DATA SHEET

Subject Number ____________

Name ____________	Age ____________
School ____________	Birthdate ____________
Teacher ____________	Race ____________
Level/grade ____________	Sex ____________

Past Schools Attended: ____________

____

MARKS	3	4	5	6
Reading				
L.A./Eng.				

TEST SCORES

I.Q. ____________

Reading ____________

Adults in home:	Children in home:
Mother ____________	____________
Father ____________	____________
Other ____________	____________
____________	____________

Ed. Status:	Place of Birth:
Mother ____________	Mother ____________
Father ____________	Father ____________
Other ____________	Child ____________
____________	Other ____________

Occupation:

Mother ______________________________

Father ______________________________

Other ______________________________

Writing/Reading habits of the subject: ____________________

____

____

____

Library Card: _____________________

Reaction to testing situation: ____________________________

____

____

HEALTH

Hearing: ___________________________

Eye Sight: _________________________

Other: _____________________________

Remarks:

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